

DIMENSIONS OF GRADUATES' JOB SATISFACTION IN THE SHORT AND MEDIUM TERMS

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Abstract. *Time-related job satisfaction is receiving growing attention in the literature. In this contribution, we analyse the changes occurring in graduates' job satisfaction and in its main dimensions at various survey occasions after graduation. We will focus, too, on the theory of job satisfaction measurement. The analysed data come from a survey of graduates at the University of Padua, interviewed with a CATI procedure six months, one year and three years after graduation. After verifying that the main dimensions are the same over time, we investigate the determinants of the changes occurring in graduate job satisfaction, finding a broad stability and some sources of variation mainly related to salary and study-job consistency variations. Graduates who move to a different job usually increase their satisfaction, at least for the most predictable aspects. Satisfaction levels also show a "toward-the-mean" effect.*

Keywords: *Job satisfaction, Dimensions of a concept, Multilevel modelling, University of Padua.*

1. DIMENSIONS OF JOB SATISFACTION

Job satisfaction (from now on, JS) is a pleasurable or positive emotional state of people who have experienced or are experiencing work. In a more abstract sense, it is the attitude of feeling pleasurable emotions toward own job. In statistical terms, it may be the likelihood of feeling pleasurable emotions if engaged in a job. Economists (Freeman, 1978; Lévy-Garboua and Montmarquette, 2004) define it as a measure of a worker's utility derived from work. The definitions are equivalent,

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despite the differing approaches. In what follows, we will refer to jobs experienced by graduates, examining, in particular, graduates' views with the aim of picturing the quality of jobs they access and, in turn, the quality of human capital they possess.

Job quality is defined according to one or more dimensions, or facets. A dimension is a relevant aspect of job quality that adds specificity to the overall concept. The dimensions relevant to the analysis of graduates' JS refer to a causal model targeted to highlight the relationship between the human capital they can offer and the labour market accessible to them. It is to be stressed that, in this paper, we picture job quality through the eyes of graduates.

JS is conceptualised as a holistic, retrospective, constructive and structural process. As a holistic concept, it is not the mere sum of satisfaction scores on job aspects, but an overall concept that may contain individual expectations, characteristics of job experience and context-related effects.

As a retrospective concept, it has the advantage of experience. A specific job might elicit a low level of satisfaction at the time that one is in that job, but might have a different level of satisfaction when seen in retrospect. However, the reflection on his or her own experience may also give a graduate the perspectives to improve either compensation or career or dynamic features of jobs. Hence, even if JS is measured as a snapshot, a graduate's job is viewed from a lifelong perspective.

JS is a constructive concept, in the sense that it is a subjective-in-construction process. The determination of what makes a job satisfactory is left to the individual. Subjective meanings are more difficult to quantify and to compare; yet subjective meanings are more representative of individual experience.

Finally, the interpretation of JS meaning would require the analysis of the system of relations that link together social and cultural objects. This aim, which refers to structuralist theories (De Saussure, 1959), would imply that subjective judgements be recorded together with data on what does what to whom, and in what sequence (Mohr, 1998).

We can consider JS to be a global concept that is composed of, or indicated by, various facets. In particular, it may be considered either a manifest variable (in a "formative" perspective), wherein specific dimensions define and compose the concept, or a latent variable (in a "reflective" perspective) indicated by a set of dimensions (Judge and Klinger, 2008). In both cases, the construct is multidimensional (Locke, 1969, 1976; Skalli *et al.*, 2008).

Measures of an individual's JS can be obtained through either a global question on JS, or a set of questions on job facets, or both. Although the two ways ideally tap the same construct, the measurement of JS with a single item on overall

satisfaction or with a collection of separate data on facets of the job² usually differ (Ferratt, 1981; Rice *et al.*, 1991; Law *et al.*, 1998; Rothausen *et al.*, 2009). In particular, job satisfaction may involve dimensions that cross job-content domains; for instance, it may involve the mood for life events or the happiness for having gained a job in hard times.

Scarpello and Campbell (1983) suggest that a single-item measure is more content-valid than a composite-facet measure of JS because the former has temporal reliability; in other words, it is probably related to the time in which the question is formed. For what systematic reason the two measures differ is an open question. It is evident that one measure should not be used as a criterion for developing the other (Highhouse and Becker, 1993).

In the following, we present some theories relevant to our model. General theories allow the defining and classifying of JS dimensions. Maslow's hierarchy of the conceptual dimensions of human needs (Maslow 1943, 1954) can be used to identify the factors affecting JS from a bottom-up perspective. His model states that individuals experience a hierarchy of needs. At the bottom level is the physical environment, which may be considered a pre-condition for a job to be taken into consideration by a graduate. Intermediate levels are the social and economic contents of a job. The highest need is that of self-actualisation, or self-fulfilment of graduates through their job.

If we order Maslow's needs from bottom to top, we can perceive that needs range from totally external variables, for instance distance from home, safety at work or quality of working environment, to the fully psychological self-centred statuses of a graduate. Self-fulfilment involves not only the actual well-being, but also the intuition of future possibilities. The measure of satisfaction will be higher and higher as more needs are fulfilled.

With the background of Maslow's needs hierarchy, Herzberg's theory (Herzberg *et al.*, 1959), which classifies job factors into either hygienic or motivational, can be considered the roughest classification of job contents. Hygiene factors refer to the physical and social environment of work, while motivation is any feeling related to self-fulfilling work experience.

Psychological theories (Campbell and Prichard, 1976, among others) distinguish intrinsic from extrinsic aspects of JS. Intrinsic aspects relate to an

² There are several instruments for the measurement of job facets composing JS. For instance, the Minnesota Satisfaction Questionnaire (Wess *et al.*, 1967) and the Job Descriptive Index (Smith *et al.*, 1969) are familiar to scholars concerned with JS. In this paper, we deal with an original measurement tool.

individual's specific-to-job feelings and attitudes that involve responsibility, challenge, demand and other motivating variables that can produce a pleasurable state; the extrinsic ones concern the physical and organisational aspects of an individual's job. *Mutatis verbis*, there is no substantial difference from Herzberg's classification.

Intrinsic job qualities are often categorised into four to six sub-dimensions. Hackman and Oldham (1975) define five characteristics that qualify a job as intrinsically motivating: (a) *task identity*, the degree to which a worker can recognise her or his contribution since s/he operates from beginning to end; (b) *task significance*, the degree to which one's work is seen as important and significant; (c) *skill variety*, the extent to which a worker is allowed to do various tasks; (d) *autonomy*, the degree to which one has enough control and discretion over her or his own job activities; and (e) *feedback*, the degree to which a worker is provided feedback about how s/he is performing her or his work activities.

Individuals who experience these job characteristics may find meaningfulness in work practice, responsibility for work outcomes and knowledge of results of their work (Hackman and Lawler, 1971; Hackman and Oldham, 1975, 1976; Hackman, 1986; Wroom, 1995).

1.1 A CLASSIFICATION OF JOB SATISFACTION DIMENSIONS

On the tracks of those presented before we introduce a classification of JS dimensions identifying two environmental dimensions, one related to the physical and organisational aspects and the other to relational conditions, and two motivational dimensions, one related to practical and the other to self-fulfilling motivations for working. These dimensions, assumed to be appropriate for graduates' JS analysis, are represented in Fig. 1 as a Maslowian hierarchy (see also Fabbris and Martini, 2007).

To describe the four dimensions, the following facets are conjectured:

- *Physical and organisational aspects* ("where"): workplace location (how far from home), safety, comfort, working conditions (timetable flexibility, workload) and company policies and practices for efficiency;
- *Social conditions* ("with whom"): relational environment (co-workers, supervisor(s), customers, easy/non-stressing conditions), juvenile or mature environment, feedback, relational rules and company policies and practices for human-resources development;
- *Practical motivations* ("what for"): salary and other benefits, durable contract, promotional opportunities, career development, free time, activities meaningful to end (moral values realisation and social and professional status attainment); and

- *Self-accomplishment* (“how”): skill valuing (autonomy, participation in decision making, responsibility/authority/challenging role, creativity), tasks’ significance and variety (exciting/non-boring activities, skill identity, manual vs. intellectual activities) and learning opportunity offering (supervision, training in the workplace).

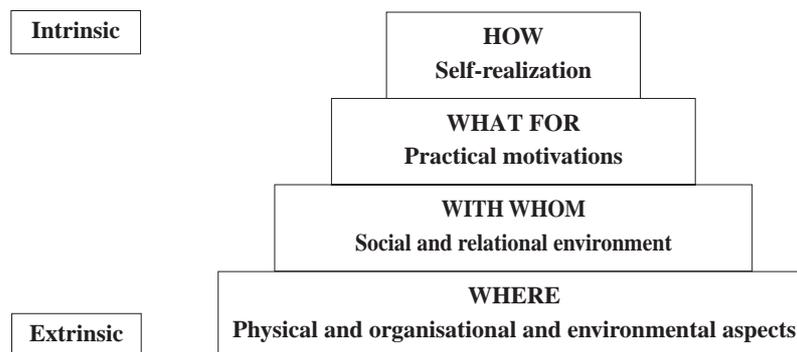


Figure 1: Dimensions of graduates' job satisfaction

It is to be highlighted that the pyramid of dimensions in Fig. 1 may represent an ordered sequence of motives.³ Graduates look at the pyramid from the top: they take for granted that the achieved degree provides them with good locations and organisations;⁴ and even if they may postpone to better times the evaluation of practical and social conditions of the gained job,⁵ they expect to be engaged only in self-accomplishing activities.

³ In some cases, the classes of within-organisation social relations and that of practical motivations could swap their rank order. For instance, Kaiser (2007) reports that blue-collar workers are particularly keen on social relations because they expect relatively little from their job. In this case, the quality of the social environment may be put at a level higher than practical motivations.

⁴ The psychological theory on JS dimensions (Herzberg, 1976; Katzell, 1980) suggests that changes dealing solely with hygiene factors do not improve satisfaction.

⁵ Some scholars (Johnson and Johnson, 2000), observing that the relationship between education and JS is weak or even mildly negative, conjecture that individual aspirations do not grow with education but along with income changes. Others (Skalli *et al.*, 2008) conjecture that some people, being less sensitive to material aspirations, undertake unpaid work (volunteer work and charity) because the type of work they are contracted to perform is a main determinant of their satisfaction.

The long path through school and university generate very high levels of expectations. It is easy to imagine that the job qualities expected by higher educated people rank high, for individuals' aspirations become soon their standards of self-satisfaction (Bandura, 1977, 1986). Graduates' ambitions are harder to satisfy as far as the job is concerned, and PhD's aspirations are even higher, whilst graduates from the humanities may expect less-structured work settings than, say, engineers (Carvajal *et al.*, 2002; Mora and Ferrer-i-Carbonell, 2009; Gil-Galvàn, 2011; Kucel and Vilalta-Bufi, 2011). Hence, more-qualified people tend to be more critical when they evaluate the qualities of the jobs they have experienced (Johnson and Johnson, 2000; Liu *et al.*, 2010).

The dimensions of JS are presumed to be:

- *Independent of each other*, which would make unique the whole reconstructed as a sum of its parts; whenever two dimensions correlate with each other, it is possible to substitute them with a wider dimension (Von Neumann and Morgenstern, 1947).
- *Frame-invariant (for a given population)*, invariance being the ideal condition of individuals who are subjectively equal through the evaluation scale (Luce, 1959). The malleable part of JS must be small (Dormann and Zapf, 2001). Frame invariance is relevant for statistical analysis although psychologically unfeasible.
- *Limited in number*, so as to be able to measure them, to attach meaning to them, and, if necessary, to intervene on the correlated social structures (Kahneman and Tversky, 1983; Mohr, 1998).
- *Measurable*, that is the indicators representing a dimension should refer to experience, for the degree of satisfaction for a job quality indicator reflects the actual experience of an outcome. Indirectly, this means that satisfaction is a description of an outcome as it is, and not as it should be.

The data on JS should be collected following simple rules: (i) both global and partial satisfaction data should be collected as they measure partially different contents; (ii) stimuli should be logically oriented in the same positive direction, so as to make the analysis clearer, as individuals with discordant cognitions may report dissatisfaction that is excessive; (iii) in particular in longitudinal surveys, stimuli should be reduced in number because the level of JS can vary according to the number of stimuli presented; (iv) the measurement scale should be the same for all questions, so as to enable the use of standard multivariate methods for the analysis of responses; (v) the measurement scale should consist solely of positive values, so as to interpret responses in a non-equivocal way as measures of satisfaction and not

of satisfaction-dissatisfaction;⁶ and (vi) in the case of identifiable multilevel sources of JS, the characteristics of all sources are to be measured (see Grilli and Rampichini, 2007, as an example of two-level conditioning of graduate satisfaction).

1.2 TIME-RELATED JOB SATISFACTION

The longitudinal analysis of graduates' JS may add information to JS dimensions. In particular, we ask ourselves if employed graduates are concerned with the same job quality dimensions as at recruitment and, if so, if and how their satisfaction varies according to their changes within and between offices and firms and to how their career develops. Panel data could help in estimating the dynamics of JS variability and highlighting its possible causes.

The time-related JS analysis is receiving attention in the literature.⁷ For instance, Hamermesh (1999) examines JS from longitudinal surveys and concludes that job satisfaction distribution temporarily reacts to promotions and better salary. However, the author admits not being able to discriminate among JS theories because the available data could be plagued by heterogeneity ("selectivity effect"), e.g. the more satisfied people may be those who invest more in themselves and whose wages are higher and grow more rapidly.

Locke (1976) found that satisfaction is unstable in multi-wave surveys and the fluctuations are higher if the stimuli are numerous. That is why the author suggests averaging the satisfaction scores in a period. Conversely, Dormann and Zapf (2001), after a meta-analysis on measures of job satisfaction at two distinct times on average separated by three years, found that consecutive JS measures generated a correlation of 0.42 and hypothesised that satisfaction tends to be relatively stable across time.

⁶ Adam (1965) considered satisfaction as absence of dissatisfaction. Porter and Lawler (1968) postulate that satisfaction depends for its values on the match between expected and obtained rewards. Obtained rewards, as parts of the expected ones, may range from nil to full accomplishment. Instead, if dissatisfaction-satisfaction is to be measured, the scale may range from a negative extreme to a positive extreme with an intermediate null score. Kahneman and Tversky (1983), studying the level of adaptation that separates positive from negative outcomes, conclude that the reference point is largely determined by expectations and social and situational comparisons. That is why it is preferable to measure satisfaction just from the positive side.

⁷ Some authors have addressed their attention to the longitudinal analysis of JS. Hinrichs (1968), Dormann and Zapf (2001), Rode (2004), Ilies and Judge (2004), Skalli *et al.* (2008) and Liu *et al.* (2010) summarise the results of various studies in this field.

Several explanations have been posited to explain this uniformity. One conjecture relates to the effect of JS on performance, namely on a possible consequence of JS (Judge *et al.*, 2001, 2002), another to life satisfaction (Rode, 2004), which can be, at the same time, either a consequence or a causation⁸ of JS, while other hypotheses relate to background and environment descriptors as well as to job characteristics.

Many attempts to enhance JS by rewarding workers have failed. Landy (1978) proposed a new theoretical interpretation of the time variations of JS, named “the opponent process theory”, which is twofold: in a first stage of the process, emotional events elicit reactions consistent with the nature of the events, while in the second stage, they may evoke emotions that counter these primary processes. For instance, a positive co-worker realm might at first instance generate satisfaction but this may cause an opposite reaction whenever colleagues manifest jealousies or supervisors show low flexibility. On the contrary, a low level of compensation could generate an initial dissatisfaction but this may be attenuated when the graduate realises that this situation is common to most freshly recruited graduates. In some cases, the opponent effect may even override the primary one (see Johnson and Johnson, 2000).

In the following sections we will analyse the data collected on a sample of graduates from Padua University. The sample was selected from the list of students who graduated in the years 2007 and 2008; the total size of the sample was 4769. The data regarding the graduates’ situation at 6, 12 and 36 months after degree achievement were collected through a CATI–Computer Assisted Telephone Interviewing system. The questionnaire examines the graduates whether they are working, or are attending an internship, or are looking for work, or are in a stand-by position (Fabbris, 2010).

For the purpose of analysing job satisfaction, just the graduates who have experienced paid work are considered: the sample size upon which cross-section analyses were carried out was thereby reduced to 2440 graduates at six months after graduation, to 2426 at one year after graduation and to 2344 at three years after graduation.

The questions submitted to the employed graduates for the study of JS consisted of the following:

- One general question on “overall satisfaction for your current job” based on a 1–10 scale, where 1 is the minimum and 10 the maximum;

⁸ Rode (2004) showed that job satisfaction and life satisfaction were correlated over time, but the two variables did not correlate significantly if the effects of self-evaluation and non-work satisfaction were discarded from both variables.

- Eleven questions on job security, skills development, social status, correspondence to cultural interests, social utility, independence and autonomy, time flexibility, leisure time, job location/characteristics, earning prospects and career opportunities. The data on the 11 facets are collected using the same measurement scale as the general question. For our analyses, we will assume cardinality of the JS measures.

The rest of the paper is organised as follows: Section 2 describes the satisfaction levels of graduates at 6, 12 and 36 months and the average differences between wave levels, plus it introduces the independent factors underlying the 11 specific satisfaction items; Section 3 analyses the changes that occurred in the general JS levels and in its sub-dimensions between consecutive waves; and Section 4 investigates the determinants of the changes. Some final remarks and suggestions for future analyses are described in Section 5.

2. SATISFACTION LEVELS AT 6, 12 AND 36 MONTHS

Table 1 reports the average scores given by graduates on the 1–10 quantitative scale for each (general and specific) job satisfaction question in the three survey waves.⁹ There are slight differences in satisfaction levels over time: the overall satisfaction tends to decrease, as well as the level of satisfaction for time flexibility, leisure time, job location, earning prospects and career opportunities; conversely, we observe an increase in the satisfaction level for job security, correspondence to cultural interests and independence/autonomy of work activities. The general trends depict a job position tending to become more stable and autonomous, and probably also more challenging and interesting as time goes by, but, at the same time, graduates are disappointed because their work and schedule become more and more demanding, while their expectations of a fast growth (of salary and career) get frustrated.

The figures presented in Table 1 cannot properly be used to analyse the change over time, since they refer to partially different sets of graduates: some respondents did not participate in subsequent survey waves, some lost (or left) their jobs and did not answer the JS questions, others found a new job and only answered the satisfaction questions in the 12 or 36 months surveys. Table 2 reports the paired sample *t*-test conducted to assess the difference between satisfaction levels in two subsequent surveys of units who participated and had a job at both survey waves.

⁹ The indicated sample sizes refer to units who participated in the survey and reported to have a job. In order to estimate the average satisfaction levels, a weighting system has been applied that takes into account, for each survey wave, the sample composition in respect to the total population of graduates in each study programme.

Table 1: Average level of overall and specific JS for University of Padua graduates at 6, 12 and 36 months after graduation

	<i>6 months</i> (<i>n = 2440</i>)	<i>12 months</i> (<i>n = 2426</i>)	<i>36 months</i> (<i>n = 2344</i>)
Overall satisfaction	7.51	7.49	7.46
Job security	6.86	6.91	7.18
Skills development	7.56	7.58	7.53
Social status	6.67	6.72	6.70
Cultural interests	7.20	7.24	7.27
Social utility	7.18	7.23	7.15
Independence/autonomy	7.67	7.74	7.79
Time flexibility	7.11	6.96	6.84
Leisure time	6.46	6.40	6.25
Job location/characteristics	7.46	7.38	7.30
Earning prospects	6.44	6.39	6.34
Career opportunities	6.35	6.32	6.30

Table 2: Difference in the level of overall and specific JS of University of Padua graduates between 6 and 12 months after graduation, and between 12 and 36 months, with statistical significance of the paired sample *t*-tests

	<i>6 to 12 months</i> (<i>n = 1943</i>)		<i>12 to 36 months</i> (<i>n = 1908</i>)	
	Δ	<i>p-value</i>	Δ	<i>p-value</i>
Overall satisfaction	-0.064	0.045	-0.048	0.174
Job security	0.024	0.617	0.323	0.000
Skills development	-0.039	0.306	-0.118	0.004
Social status	-0.013	0.721	-0.016	0.675
Cultural interests	-0.041	0.290	0.034	0.436
Social utility	0.037	0.347	0.028	0.514
Independence/autonomy	0.139	0.000	0.062	0.098
Time flexibility	-0.112	0.027	-0.038	0.502
Leisure time	-0.023	0.623	-0.205	0.000
Job location/characteristics	-0.121	0.003	-0.054	0.262
Earning prospects	-0.055	0.178	-0.138	0.003
Career opportunities	-0.107	0.011	-0.165	0.001

There are non-significant differences in satisfaction levels with social status, cultural interests and social utility, while some differences are only significant at 6–12 month comparison (overall satisfaction, time flexibility and job location), and others at 12–36 month comparison (job security, skills development, leisure time, earning prospects). Satisfaction with career opportunities steadily decreases (even more strongly from 12 to 36 months), while independence increases.

The 11 items on specific satisfaction aspects have been reduced through factor analysis to a lower number of factors. At a first stage of the study, we have conducted separate factor analyses (not reported here for lack of space) in each wave dataset, confirming the existence of three common factors, with an analogous proportion of explained variance and similar factor loadings (hence, with an analogous meaning for the factors). Then, the initial datasets have been rearranged in a triple-sized dataset where the answers given to the same question at 6, 12 and 36 months are treated as different observations of the same variables. The factor analysis conducted on this augmented dataset allows for the creation of common factors over time.

Cronbach's Alpha (Cronbach, 1951) is 0.773, so the first three factors explain 59.3% of the total variance;¹⁰ Table 3 reports Varimax rotated factor loadings, communalities and the explained variance of each rotated factor.

Table 3: Factor loadings, communalities and explained variance in the rotated (Varimax) factor analysis conducted on the rearranged dataset

	<i>I factor</i>	<i>II factor</i>	<i>III factor</i>	<i>Communality</i>
Job security	0.683	-0.094	0.064	0.480
Skills development	0.440	0.687	0.006	0.665
Social status	0.517	0.591	0.069	0.622
Cultural interests	0.120	0.824	0.054	0.697
Social utility	-0.169	0.715	0.162	0.566
Independence/autonomy	0.238	0.435	0.389	0.397
Time flexibility	0.084	0.239	0.691	0.542
Leisure time	-0.062	-0.044	0.814	0.668
Job location/characteristics	0.230	0.051	0.570	0.381
Earning prospects	0.830	0.176	0.174	0.751
Career opportunities	0.810	0.302	0.106	0.758
<i>Explained variance</i>	<i>22.2%</i>	<i>21.8%</i>	<i>15.4%</i>	

¹⁰ Eigenvalues are: 3.77, 1.44, 1.33; the fourth component's eigenvalue is 0.84.

The first factor represents the material acknowledgement for work (earning, career, security), while the second refers to immaterial acknowledgement: correspondence to cultural interests, social utility and skills development; finally, the third factor includes satisfaction levels for daily aspects of work, namely time management and the work environment. These dimensions reproduce the facets hypothesised in Section 1, the only exception being the social dimension (“with whom”), not represented here since no satisfaction item refers to relational conditions.

3. VARIATION IN SATISFACTION LEVELS OVER TIME

The average change of satisfaction levels over time is quite small, but this doesn't necessarily mean there is no individual change: overall satisfaction shows individual differences up to ± 9 out of 10 from 6 to 12 months, and ± 8 from 12 to 36 months.¹¹ Most of the evaluations vary from one interview to the next, the most stable being score 8, which is confirmed in more than half of the cases from 6 to 12 months, and in almost half of the cases from 12 to 36 months.

Table 4 reports the changes of job satisfaction levels between 6 and 12 months after graduation and 12 and 36 months after graduation. From 6 to 12 months, about 40% of JS data are stable, and most of the changes are due to slight moves of one or two points up or down the scale; changes are more frequent on the negative side, and differences of at least 3 points are about 3% on each side. Approximately the same is true for the changes in the time span from 12 to 36 months: 38% of evaluations remain stable; worsenings and improvements of one point are the most frequent; and larger differences are rarer, albeit slightly more frequent than from 6 to 12 months after graduation. Again, negative variations are more frequent, except for variations of more than two points.

The correlation between JS expressed at 6 and 12 months after graduation is 0.5 (Table 4), which is higher than from 12 to 36 months (0.32). This is likely to be due to the shorter time span between the first pair of observations. It is worth noting that the correlations are higher for the three dimensions derived from factor analysis in Section 2: factor analysis, in fact, reduces the effect of random measurement error, and could have induced a larger stability over time.

Also for the three factors, correlations are higher between 6 and 12 months after graduation; the shorter time span is certainly one of the reasons, maybe together with the fact that most of the changes both in the job situation and in

¹¹ Also the three factors, built to have a standard normal distribution, show changes up to ± 5 points, although their direct comparisons are not reported here.

graduates' opinion about it take some time of a trial stage to happen. The most stable factor regards satisfaction for the material acknowledgement (which is, in fact, a more stable and factual facet), while satisfaction for time and space aspects of work is the most fickle, maybe also as a consequence of contingent events in the job environment and/or time requirements and scheduling.

Table 4: JS percent changes and JS level correlations between 6 and 12 months and between 12 and 36 months for University of Padua graduates, either in the event of job change or if no change occurred

	6–12 months (n = 1883)			12–36 months (n = 1877)		
	Job change (n = 229)	No change (n = 1654)	Total	Job change (n = 354)	No change (n = 1446)	Total
JS difference:						
0 - Stability	24.9%	43.0%	40.8%	31.9%	39.3%	37.7%
+1	25.8%	17.5%	18.5%	19.5%	17.8%	18.3%
-1	11.8%	22.6%	21.3%	14.4%	24.2%	22.1%
+2	14.0%	4.4%	5.6%	11.9%	3.3%	5.2%
-2	6.6%	7.9%	7.7%	7.3%	8.9%	8.5%
+3 or more	12.7%	1.7%	3.0%	10.7%	3.0%	4.7%
-3 or more	4.4%	2.9%	3.1%	4.2%	3.5%	3.5%
Correlation JS	0.101	0.591**	0.504**	0.191**	0.376**	0.318**
Corr. Factor 1	0.421**	0.699**	0.657**	0.318**	0.577**	0.519**
Corr. Factor 2	0.258**	0.726**	0.652**	0.295**	0.566**	0.474**
Corr. Factor 3	0.180*	0.602**	0.548**	0.153**	0.462**	0.388**

** Significant at 0.01 level (2-tailed); * Significant at 0.05 level (2-tailed)

Analysing separately the data of graduates who changed their job between survey occasions, there is evidence that correlation levels, both for global job satisfaction and for its facets, are noticeably higher for those who kept the same job. Moreover, we can see that most job changes improve the JS levels, suggesting that these changes are voluntary consequences of frequent job search attempts rather than unlucky consequences of dismissals or contract resolutions.

Correlation between general JS at 6 and 12 months after graduation is even not significantly different from 0 (p-value = 0.127) for graduates who changed the job, suggesting that, in the very first stages after achieving their degree, graduates may undertake very different and unrelated jobs, as hypothesised by the "job shopping" theory (Johnson, 1978), e.g. the process, often experienced at the beginning of the working life, when high between-company mobility and variability of job types occur so as to find a suitable job.

This is at odds with the idea of Dormann and Zapf (2001) that working conditions tend to remain stable even if job changes occur. The authors' hypothesis may refer to a consolidated stage of the working life, while the analysed population of fresh graduates has peculiar characteristics, especially during the first years after graduation. It is worth noting that, when we consider the changes that occur in general JS between 12 and 36 months after graduation for people who changed the job, the correlation is significant even if the time span is longer.

4. DETERMINANTS OF SATISFACTION VARIATIONS

A broad stability of job satisfaction over time may pair off with occasional instabilities, so we can observe some large changes suggesting major twists in the working situation.

For this reason, it makes sense to investigate the determinants of the changes occurring over time in the overall satisfaction level and in its main dimensions. The dependent variables will then be the differences between subsequent survey occasions, while the potential predictors represent the changes that may occur in the domestic and working life, as well as some individual characteristics:

- *Control variables*: gender; type of degree (bachelor's or master's); work status at graduation; satisfaction level in the first survey occasion;¹²
- *Family changes*: got married; had children; left parents' home; re-entered parents' home;
- *Work changes*: changed job; changes in income, evaluation of study-job consistency and of study adequacy for the performed job; improvement or worsening of the evaluation on the type of degree needed for the job;¹³ and

¹² This control variable has been introduced after observing the existence of a "regression towards the mean" effect, such that graduates who were particularly dissatisfied in the first time point tended to improve their evaluation, while very satisfied graduates tended to worsen it. This is in agreement with the opponent process theory (Landy, 1978). Not taking into account the starting point resulted in an overlap of change predictors and level predictors, and sometimes in a counter-intuitive spurious effect of some variables, which seemed to produce a negative (or positive) change in satisfaction only because of being associated with a high (or low) starting level. As emphasised by Johnson and Johnson (2000), in fact, the opponent effect may even exceed the principal effect.

¹³ Income, study-job consistency and study adequacy are measured on a quantitative scale, then we consider the quantitative change; the type of degree needed for the job is measured on an ordinal scale (only that specific university degree, also other types of university degree, a high school degree is sufficient, no qualification needed) and transformed into two dichotomous variables: changed to a higher or more specific degree requirement, and changed to a lower or less-specific degree requirement.

- *Possible interactions:* gender and children; work status at graduation, and job change.

We fitted separate models for the changes that occurred between 6 and 12 months and between 12 and 36 months after graduation; since the significant predictors and their effects were shown to be analogous, here for simplicity we only report the models to explain the global changes between 6 and 36 months after graduation. The sample size is then reduced to the 1656 graduates who participated in both the 6 months and 36 months surveys, and who worked both times.

4.1 CHANGES IN OVERALL SATISFACTION

In analysing the satisfaction level and its changes over time among graduates, we assume a hierarchical structure of data, with graduates clustered into study programmes. Hence we consider applying a two-level regression model with random intercept, where graduates are level-1 units and study programmes are level-2 units.¹⁴ The model is fitted through the MIXED procedure of the statistical software SAS (SAS Institute Inc., 2000).

The first step consisted of fitting the empty model with a random intercept, in order to calculate the intra-class correlation coefficient, which turned out to be quite low ($\rho = 0.0042 / (2.5026 + 0.0042) = 0.0017$), indicating that only 0.17% of the total variance was due to study programmes. Also, computing the approximate design effect from the intra-class correlation coefficient and the average group size¹⁵ led to a value of 1.1, far below the threshold of 2 suggested by Muthén and Satorra (1995) as an indicator for multilevel modelling.¹⁶ Hence, a linear regression model can be considered a good fit.¹⁷

Interaction parameters were non significant and have been removed from the model, as all the variables related to changes in the family life; also the two variables on the comparison between the type of degree needed in the first and the second

¹⁴ The involved study programmes are 12; to avoid having a too small number of level-2 units, and to take into account the large differences between the two, master's degrees and bachelor's degrees in each study programme have been analysed separately; this gives rise to 22 level-2 units (for the study programmes in Law and Psychology, only graduates in master's degrees have been surveyed).

¹⁵ The formula is: $DEFF = 1 + (\text{average cluster size} - 1) * \text{intra-class correlation}$.

¹⁶ The same is true when we consider the 12 study programmes as level-2 units.

¹⁷ As a counterproof, the same model has been fitted both with the linear regression and the multilevel models, leading to parameter estimates that are exactly the same to two or three decimal places.

survey occasion, which were non significant, have been removed, while the control variables have been kept in the model although they were non-significant. Table 5 shows parameter estimates, standard errors and significance levels. This model explains 47.6% of the variance of the overall satisfaction difference, while the adjusted R^2 is 46.9%.

Overall satisfaction changes depend, as expected, on the starting level of the satisfaction level, according to the classical “regression toward the mean” effect and in agreement with the opponent process; this effect is non-linear, since also the squared variable is significant. The change also depends on the work improvements (or worsenings),¹⁸ *in primis* changes in the income and study-job consistency, and also the evaluation of the studies adequacy¹⁹ for the performed job gives a positive contribution.

Graduates who changed their job tend to show a higher level of overall satisfaction; this confirms that most of the observed job changes are not due to dismissals but to voluntary moves in search of a better working position.

Gender, working status at graduation and type of degree do not show any effect, indicating that satisfaction changes are analogous for males and females, master’s and bachelor’s graduates and graduates who already worked at graduation or entered a job after it. Conversely, the significance of the attended faculty effect probably reflects the expectations of the different groups of graduates: graduates in more prestigious (and sometimes difficult) study programmes, such as Engineering or Law, show a lower satisfaction increase than graduates in the Humanities, Agriculture, Pharmacy, Education and Statistics.

¹⁸ The squared effect also was tested for the differences in income, consistency and adequacy, and it resulted to be non significant.

¹⁹ This variable gives a strange “joint” evaluation of both the performed job and the study programme; here we hypothesise that the reappraisal (or belittlement) of the studies can influence the job satisfaction, but we cannot exclude that this reappraisal/belittlement itself may be a consequence of a satisfaction change.

Table 5: Parameters estimates (b), standard errors (se) and p-values of the predictors for the linear regression model with the dependent variable being the change in the overall JS from 6 to 36 months after graduation

<i>Variable</i>	<i>Answer categories</i>	<i>b</i>	<i>se(b)</i>	<i>p-value</i>
Constant		6.047	0.458	< 0.001
Faculty (vs. Engineering)				
	Agriculture	0.332	0.121	0.006
	Economics	0.072	0.138	0.600
	Pharmacy	0.328	0.138	0.018
	Law	-0.112	0.562	0.842
	Humanities	0.240	0.116	0.038
	Veterinary Science	0.190	0.245	0.439
	Psychology	0.050	0.222	0.821
	Education	0.250	0.130	0.055
	Sciences	0.128	0.106	0.231
	Political Science, Sociology	-0.048	0.126	0.703
	Statistical Sciences	0.282	0.136	0.039
Female gender (vs. male)				
		-0.098	0.069	0.155
Bachelor's degree (vs. master's degree)				
		0.047	0.066	0.476
Worked at graduation				
		-0.022	0.062	0.721
Satisfaction level at 6 months				
		-1.191	0.122	< 0.001
Squared satisfaction level at 6 months				
		0.033	0.008	< 0.001
Changed job				
		0.119	0.068	0.078
Income difference				
		0.0004	0.000	< 0.001
Study-job consistency difference				
		0.191	0.016	< 0.001
Study adequacy evaluation difference				
		0.036	0.018	0.048

4.2 CHANGES IN SATISFACTION FOR MATERIAL ACKNOWLEDGEMENT

We first tried to fit a multilevel model to explain the difference between factor 1 described in Section 2 (satisfaction for material acknowledgement) from 6 months to 36 months after graduation, but the intra-class correlation coefficient equals 0.0016 (only 0.16% of the total variance is at level-2) and the design effect equals 1.1, and the two results do not support the hypothesis of a hierarchical structure.

Again, we fit a linear regression model instead. Excluding the non-significant variables²⁰, we obtain the model reported in Table 6; control variables are kept in the model independently of their significance. R^2 equals 31.2%, lower than for the previous model (adjusted $R^2 = 30.1\%$).

Table 6: Parameters estimates (b), standard errors (se) and p-values of the predictors for the linear regression model with the dependent variable being the change in the material acknowledgement dimension of JS from 6 to 36 months after graduation

<i>Variable</i>	<i>Answer categories</i>	<i>b</i>	<i>se(b)</i>	<i>p-value</i>
Constant		-0.146	0.078	0.063
Faculty (reference: Engineering)				
	Agriculture	-0.102	0.094	0.278
	Economics	0.036	0.106	0.737
	Pharmacy	-0.095	0.104	0.359
	Law	0.214	0.473	0.652
	Humanities	-0.162	0.088	0.067
	Veterinary Science	-0.419	0.184	0.023
	Psychology	-0.293	0.170	0.086
	Education	-0.392	0.100	< 0.001
	Sciences	-0.178	0.082	0.030
	Political Science, Sociology	-0.138	0.095	0.146
	Statistical Sciences	0.082	0.104	0.430
Female gender (vs. male)				
Bachelor's degree (vs. master's degree)				
Worked at graduation				
Material acknowledgement at 6 months				
Squared material acknowledgement at 6 months				
Changed job				
Income difference				
Squared income difference				
Study-job consistency difference				

²⁰ Non-significant are the hypothesised interaction effects, all the variables describing changes in the family life, the two variables on changes in the required education degree and the difference in the study adequacy evaluation.

The opponent effect is still present, and still non-linear (the squared variable being significant), but this satisfaction dimension depends mainly on income differences, whose squared effect is also significant and positive. The improvements in study-job consistency also lead to a positive change in the satisfaction for the material acknowledgement, and job changes are confirmed to be a positive satisfaction factor, suggesting again that recent graduates change job mainly purposely in order to get better conditions.

Gender and work status at graduation are non-significant, while bachelor's graduates seem to feel satisfied with the material acknowledgement more than master's graduates, maybe also thanks to lower initial expectations. As far as the material acknowledgement is concerned, graduates in Engineering, Law, Economics and Statistics are those whose satisfaction raised the most, while this dimension of satisfaction tends to decrease for graduates in Education, Veterinary Sciences, Humanities and Sciences.

4.3 CHANGES IN SATISFACTION FOR PROFESSIONAL ACKNOWLEDGEMENT

The attempt to fit a multilevel model for the observed difference, between 6 and 36 months after graduation, of the immaterial and professional acknowledgement satisfaction dimension suggests, once again, that there is no intra-class correlation, and hence the linear regression is more suitable.

Interactions are non-significant, as are the changes in family life: it is remarkable that family life does not affect overall JS, neither its material nor professional acknowledgement dimensions. Again, among the work changes, differences in the required study degree and in the study adequacy judgment are non-significant, and in this model also having changed job does not reach significance: probably graduates moved to a new job because they did not like the previous, or were in search for better economic conditions, while the professional acknowledgement is something more difficult to foresee from an interview or a job board ad. The resulting model, which includes significant variables and control variables, is reported in Table 7. The rate of explained variance is quite high, R^2 being 47.5% (adjusted $R^2 = 46.8\%$).

Table 7: Parameters estimates (b), standard errors (se) and p-values of the predictors for the linear regression model with the dependent variable being the change in the professional acknowledgement dimension of JS from 6 to 36 months after graduation

<i>Variable</i>	<i>Answer categories</i>	<i>b</i>	<i>se(b)</i>	<i>p-value</i>
Constant		-0.779	0.068	< 0.001
Faculty (reference: Engineering)				
	Agriculture	0.076	0.086	0.379
	Economics	-0.172	0.099	0.081
	Pharmacy	0.276	0.096	0.004
	Law	0.443	0.318	0.164
	Humanities	0.063	0.080	0.430
	Veterinary Science	0.188	0.166	0.258
	Psychology	0.236	0.154	0.125
	Education	0.190	0.090	0.035
	Sciences	0.039	0.075	0.598
	Political Science, Sociology	-0.073	0.086	0.397
	Statistical Sciences	-0.009	0.096	0.922
Female gender (vs. male)		0.027	0.048	0.570
Bachelor's degree (vs. master's degree)		-0.014	0.046	0.761
Worked at graduation		0.037	0.043	0.384
Professional acknowledgement at 6 months		-0.621	0.023	< 0.001
Squared professional acknowledgement 6 months		0.047	0.012	< 0.001
Income difference		0.000	0.000	0.052
Squared income difference		0.0000002	0.000	0.025
Study-job consistency difference		0.172	0.011	< 0.001

To a large extent this model gives hints similar to the previous models: there is a (nonlinear) opponent effect, and satisfaction for the professional acknowledgement grows with income and job consistency; income again has a nonlinear effect.

Gender, type of degree and work status at graduation confirm their non-significance, while graduates tending to enhance their satisfaction level for the professional acknowledgement belong to Education and Pharmacy programmes, whilst graduates in Economics tend to show some disappointment.

4.4 CHANGES IN SATISFACTION FOR TIME AND SPACE ORGANISATION

The intra-class correlation coefficient is slightly higher than in the previous models ($\rho = 0.006$), indicating that 0.6% of the total variance is at level-2. However, the design effect is 1.36, still lower than the suggested threshold of 2, and then a multilevel data structure has to be excluded.

Parameters estimates, standard errors and p -values of the fitted linear regression model to explain the change in the time and space organisation dimension of satisfaction from 6 to 36 months after graduation are presented in Tab. 8. Only control variables and significant predictors are kept in the model. R^2 is 33.3%, adjusted $R^2=32.3\%$

Table 8: Parameters estimates (b), standard errors (se) and p-values of the predictors for the linear regression model with the dependent variable being the change in the time and space organisation dimension of JS from 6 to 36 months after graduation

Variable	Answer categories	<i>b</i>	<i>se(b)</i>	<i>p-value</i>
Constant		-0.343	0.085	< 0.001
Faculty (reference: Engineering)				
	Agriculture	0.153	0.106	0.150
	Economics	0.055	0.120	0.643
	Pharmacy	-0.171	0.117	0.145
	Law	-0.691	0.538	0.199
	Humanities	0.256	0.099	0.010
	Veterinary Science	0.358	0.207	0.084
	Psychology	0.158	0.191	0.406
	Education	0.325	0.111	0.003
	Sciences	0.084	0.092	0.359
	Political Science, Sociology	0.147	0.107	0.169
	Statistical Sciences	0.205	0.117	0.080
Female gender (vs. male)		-0.013	0.060	0.824
Bachelor's degree (vs. master's degree)		0.070	0.057	0.214
Worked at graduation		0.015	0.053	0.777
Time and space satisfaction at 6 months		-0.649	0.026	< 0.001
Changed job		0.135	0.057	0.018
Income difference		0.0002	0.000	0.023
Study-job consistency difference		0.033	0.014	0.017
Had children		-0.144	0.221	0.515
Interaction female * children		0.512	0.277	0.064

In this case, one of the interactions is significant: female graduates who had children in the considered time span tend to increase their appreciation towards the time and space organisation aspects of work. This makes sense, since women with children experience additional problems in reconciling work with family life, and then working time flexibility, leisure time and some characteristics of work location might become crucial.

As far as the other predictors are concerned, most information parallels that of the previous models: an opponent effect and a positive effect of differences in income and consistency. All the effects are linear, squared effects being non significant. There is a positive effect of the job change, which indicates once more that changing the job is in general a voluntary action, done to search for something more convenient, more profitable or more satisfactory, i.e. graduates are able to change for a better situation whenever it is possible to evaluate and predict the characteristics of the new position; the only exception, in fact, was the professional acknowledgement, which is probably less predictable, at least before entering the new job.

Graduates in Veterinary, Education and the Humanities are those who improve most of their satisfaction for work schedule and environment, while graduates in Law, Pharmacy and Engineering tend not to improve their satisfaction.

5. FINAL REMARKS

In this study, first we laid the foundation to analyse between-occasion differences in graduates' job satisfaction and focused on the conditions at work of University of Padua graduates. A first result of our analyses is that the variance of JS difference between two survey occasions, even at a two-year distance, is mild. The correlation between JS levels two survey occasions apart is 0.50 for 6–12 month comparison and 0.32 for 12–36 month comparison. This may depend on the tendency of graduates to skip between jobs in the initial stages of their working life. In fact, people who changed their job between two survey occasions correlate just 0.10 if 6 months from graduation data are compared with those at 12, and 0.19 comparing 12 and 36 months. If JS data are “cleaned out” of movers' data, the correlation levels grow to 0.59 comparing 6 and 12 months and to 0.38 comparing 12 and 36 months.

Another main outcome of our analyses is that gender, working status at graduation and types of degree did not show significance in predicting JS time-variations. Just work facts that happened within the time interval between two survey occasions could change the JS.

However, the literature (Dormann and Zapf, 2001, among others) suggests that JS may stabilise, at least in the short term, because an individual's working conditions tend to be similar even if job changes occur. In fact, changes for graduate jobs are constrained in terms of required competencies and working conditions, if we consider both an individual graduate who changes his or her job and the whole category of graduates. A graduate may change his or her job within the constraints of his or her expectations and competence, plus the social and economic conditions of the labour market tend to remain steady in the short run. That is why the overall satisfaction for the new job cannot be much different from the previous one. What may change significantly may be a single aspect, which is often the reason for the change.

A growing JS is expected, instead, if the graduate keeps his or her initial job. In this case, an improvement in JS is expected any time a better working condition is gained, either in monetary or non-monetary terms. The Landy's opponent process (Landy, 1978) may mitigate the effects of eventual benefits. It is easy to conceive that graduate expectations are so high initially that a small improvement may not affect satisfaction at all or may even turn to disappointment if it shows up later than expected.

In contrast, graduates who have to face a situation worse than the initial one may react, in a second phase, in a direction opposite to the initial, negative, one, for experience may develop the skill of coping with the market, a sort of resilience capacity. The opponent process, in this case, acts to mitigate the possible negative effects.

This tendency to flatness confines job satisfaction to the class of second-tier indicators for the assessment of time variability of job quality.

Our analyses highlighted that the between-wave correlations of the three factors are even larger than that of the global JS comparison. The graduates' JS for material rewarding is as high as 0.66 for 6–12 month changes and 0.52 for 12–36 month changes, and that for immaterial acknowledgement is 0.65 when 6- and 12-month satisfaction data are compared and 0.47 for the 12–36 month comparison. It is then possible to conjecture that the well-defined facets of JS are relatively stable in people's mind, whilst the global satisfaction may be affected by numerous uncontrollable factors that may weaken the correlation of satisfaction data a semester or two years apart.

Uncontrollable factors can be considered a random noise for our analytical purposes. In fact, if we admit that JS data do not vary if they fluctuate just by a ± 1 score in a decimal scale, the stability rate approximately doubles both for the 6–12 month and for the 12–36 month comparison.

Another issue was raised by our analyses. Ninety-six percent of our sample stated that graduates were satisfied with their job either one year after graduation or two years later. Does this mean that almost all jobs experienced by Padua University graduates are desirable jobs? Some psychologists (Diener and Diener, 1996) argue that when reporting own satisfaction, rather than dissatisfaction, one's perspective tends to increase the mean satisfaction level, as is the case for any one-sided question (even if it does not alter the rank order of either satisfied or dissatisfied people). There is evidence though to state that almost all jobs experienced by graduates belong to the category of fair or good jobs.

There is still a lack of theory in JS measuring. In fact, JS may have different meanings according to the population to be examined and the aim of the study. We focused our analysis on the JS of freshly recruited graduates, but our considerations would have been quite different if we assumed, for instance, the perspective of a social psychologist with the intention of improving the JS of various types of workers within a firm. Fresh graduates still consider their job as provisional; therefore, they may care about the distance from home and free time, while they may give lower initial importance to salary, provided that it consists of about the same "thousand euros" amount as any freshly recruited graduate. Conversely, people who have been working for decades may be more concerned with their income regularity, with the possibility of overtime work to increase their own income, with hierarchy climbing, or promotions, or similar success outcomes.

Di Paolo and Mane (2012) claim the necessity of a deeper insight into the JS of specific groups, such as university graduates. We too attach importance to such studies because, by considering only people with an analogous human capital, we may skip both the differential conditioning effect of self-reported satisfaction and the potential bias of unobserved determinants of JS correlated to the education level.

Hence, we assert that each JS questionnaire should be designed specifically for the population at hand. We propose to measure JS both as a global concept and taking into account its facets. The classificatory hierarchy described in Figure 1 detects four JS facets. Even if the system of work-related values may vary according to people's mind, it is important that the system for classifying facets remains unchanged so as to enable researchers to compare different populations and also the same population in time.

The indicators to be selected for conducting a survey on JS facets do require further insight. However, our analyses show that, over time, facets are even more stable than global satisfaction, provided appropriate indicators of single facets are measured. A multivariate analysis of equivalent sets of indicators can then overcome the problem of finding full agreement among scholars as far as the facets' indicators are concerned.

ACKNOWLEDGEMENTS

This work was pursued as a part of two projects: PRIN 2007 (CUP C91J11002460001), “Models, indicators and methods for the analysis of the educational effectiveness of a university study programme with the purpose of its accreditation and improvement”, jointly funded by the Ministry of Education and the University of Padua; and a 2008 project of the Padua University (CUP CPDA081538), entitled “Effectiveness indicators of tertiary education and methodological outcomes of the research on University of Padua graduates”, both co-ordinated by L. Fabbris. The authors share the responsibility of the whole paper; in detail, M.C. Martini edited Sections 2, 3 and 4, and sub-sections, and L. Fabbris Sections 1 and 5, and subsections.

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