Revisiting equity theory in the global virtual teams

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Abstract:

Purpose The purpose of this study is to test whether equity theory (ET) – which posits that individuals compare their outcome/input ratio to the ratio of a "comparison other" and classify individuals as Benevolent, Equity Sensity, and Entitled – applies to the modern workplace of global virtual teams (GVT), where work is mostly intellectual, geographically dispersed and online, making individual effort nearly impossible to observe directly.

Design/methodology/approach Using a sample of 1,343 GVTs comprised 6,347 individuals from 137 countries, this study tests three ET's predictions in the GVT context: a negative, linear relationship between Benevolents' perceptions of equity and job satisfaction in GVTs; an inverted U-shaped relationship between Equity Sensitives' perceptions of equity and job satisfaction in GVTs; and a positive, linear relationship between Entitleds' perceptions of equity and job satisfaction in GVTs.

Findings Although the second prediction of ET is supported, the first and third have statistically significant opposite signs.

Practical implications The research has important ramifications for management studies in explaining differences in organizational behavior in GVTs as opposed to traditional work settings.

Originality/value The authors conclude that the main novelty with ET in GVTs is that GVTs are an environment stingy with satisfaction for "takers" (Entitleds) and generous in satisfaction for "givers" (Benevolents).

Keywords: equity theory | global virtual teams | x-culture | equality | satisfaction

Article:

1. Introduction

Equity theory (ET) has gained considerable popularity in the literature after being introduced in the seminal work by Adams (1963). He purported to incorporate into the antecedents of employee motivation the (as yet) unaddressed feeling of unfairness, which Herzberg et al. (1957) earlier identified as "the most frequently reported source of job dissatisfaction". Adams (1965) also sought to investigate effective solutions to counteract the effects of the feeling of unfairness. Adams's work was followed by authors such as Deutsch (1975), Leventhal (1976) and, more recently, Bakhshi et al. (2009), Burrus and Mattern (2010), until Cheng et al. (2020), Yoon and Almond (2022), Prieto et al. (2023). According to the extant theory, equity is defined as the perception of assessing the consistency between outcomes and the norm for allocating rewards.

ET's main postulate is that employee satisfaction, motivation and commitment to the organization are not merely driven by nominal amounts of compensation but, rather, that satisfaction derives from a perception of one's input-reward ratio relative to the ratio of other employees. When the ratios are comparable, employees will be content and motivated; when they are not, i.e. if one's perception is that other people receive more relative to their input, one's satisfaction and motivation drop, undermining the workgroup's morale and triggering numerous adverse behavioral consequences. Top performers are satisfied if their rewards are commensurate with their inputs. Likewise, those getting the least could still be content if they realize their lower output results from their lesser efforts (i.e. lower input); thus, the input-reward ratios are qualitatively balanced across the spectra of performances and rewards. By way of illustration, a working parent would accept lower compensation in return for flexible working hours to care for the family (Adams, 1963).

In his body of scholarly work, Adams considered as independent organizational variables (henceforth, inputs) education, intelligence, experience, training, skills, seniority, age, sex, ethnic background, social status, job effort, personal appearance, health, possession of tools and spouse's characteristics. On the other hand, as dependent variables (or outputs), he considered pay, intrinsic rewards, satisfying supervision, seniority benefits, perks, fringe benefits, job status, status symbols, job perquisites, the quality of working conditions, monotony and uncertainty over one's fate. It is thus the ratio of these inputs-outputs that, according to ET, determines organizational workers' satisfaction and motivation (Miner, 2005).

The last half-century brought about significant changes to the nature of work and workplace environment. Compared to blue-collar jobs, white-collar jobs grew significantly, changing the originally considered inputs and outputs. Objective assessments of the quantity and quality of input of knowledge workers are notoriously difficult, as are the contributions of designers, writers, scientists, engineers, managers, counselors, teachers and the like. This assessment process is inherently subjective, and the value of white-collar workers' inputs can only be appraised long after it is manifested, if ever.

Under the circumstances, and considering that the concepts of equity and its foundations have undoubtedly been transformed due to the rapid changes in the business environment, this knowledge gap justifies the investigation of ET in the current context. In addition, the research sheds light on the applicability of ET in global virtual teams (GVT). Therefore, this manuscript offers an up-to-date discussion of the knowledge gap for the specific topics under study.

The literature refers to the working context as GVTs, and we follow the definition of GVTs by Gilli et al. (2022): GVTs are distributed groups whose members are geographically dispersed and whose work is coordinated predominantly with electronic information and communication

technologies. These authors list the benefits of adopting such strategies for the interaction of geographically dispersed teams, namely:

- the ability to collaborate across using virtual channels, away from the home office, with local and international colleagues;

- overcoming barriers such as the COVID pandemic lockdown for the continuity of international business activities; leveraging the availability of skilled individuals, regardless of geographic boundaries; and

- maximization of the quality of decision-making.

Globalization and the development of communication technologies contributed to an increasing reliance on virtual workgroups. A survey by Culture Wizard (2018) has shown that up to 87% of white-collar workers in OECD countries have completed projects by acting as members of virtual teams, at least partially. The COVID-19 pandemic further accelerated the reliance on virtual workgroups, as the pandemic necessitated the shift toward telework and the use of teleconferences in lieu of international travel for meetings.

Unlike traditional workplace environments, where all employees work on the same factory floor or in the same office, the effort and time dedicated to completing tasks cannot be directly observed. As a result, monitoring the actions of a specific virtual team member is harder – with the exception, of course, of the duration of online video calls. Therefore, given its subjective nature, the new workplace environment makes assessing one's input-reward ratio more difficult vis-à-vis those of other team members.

Specifically, this study revisits the applicability of ET in the context of the modern workplace, where work is mostly intellectual, online, performed within teams and subject to geographic dispersion among workers, which renders it nearly impossible to observe workgroup the members' efforts, time dedicated to the job and inputs.

The gap in the literature that we aim to fill is testing and revisiting the predictions of a classic ET theory in the new context of GVTs.

Interestingly, findings show that personal predispositions or traits still hold and possess critical value in GVTs as in traditional workplaces. In other words, the team members' inclination to adopt an altruistic behavior or a more self-centered position – defined, in ET, as Benevolent or Entitled – is the key to explaining the effect of input-reward perceptions with regard to employee morale and motivation.

Section 2 reviews the literature and lays out our hypotheses. Section 3 details our methods, sampling procedures, study context and measures, followed by a report of the results of our analyses in Section 4. Finally, in Section 5, we discuss the theoretical and practical implications of our findings, the limitations of this study and the directions for future research.

2. Literature review and theory development

2.1 Foundations of equity theory

The ET (Adams, 1963) draws from the exchange, dissonance and social comparison concepts to predict how individuals manage their relationships with others. The theory proposes that due to the distress of either over-reward or under-reward, inequitably rewarded individuals should

experience lower levels of job satisfaction than equitably rewarded individuals. ET hinges on the premise that individuals assess their outcome/input ratio and compare it to the ratio of a "comparison other". The theory assumes that individuals are equally sensitive to equity, which was dubbed the "norm of equity" – meaning that, when comparing the outcome/input ratios of the "comparison other", if the outcome/input ratio of the individual is perceived to be unequal with respect to the "comparison other", a perception of inequity emerges. The greater the inequity the individual perceives (be it in the form of an over-reward or under-reward), the greater the individual's distress.

The referent categories for comparison in ET are self-evaluations (SE) or self-inside, comprising the individual's experience within their current organization; self-outside, that is, the individual's experience with other organizations; others-inside, which derives from others within current organization; and others-outside, comprising others outside of the individual's organization, such as perceptions anchored in individuals with the same educational level or age (Scholl et al., 1987).

Leventhal (1976) suggests three rules to judge equity in the comparison:

1. the "contribution" rule, which posits that rewards of others should be commensurate with the inputs;

2. the "needs" rule, which means that others should be regarded according to their own needs; and

3. the "equality" rule, irrespective of individual inputs.

The first one, the "contribution" rule, is dominant in management studies, and Huseman et al. (1987) build on ET and Leventhal's contribution rule to judge equity but posit that individuals are not equally sensitive to equity. In other words, not all individuals adhere to the "norm of equity". Interestingly, the authors also question whether equity sensitivity is a state or a trait (which they seem to consider). They define input "I" and output "O", both for self and the "comparison other".

The proposed Equity Sensitivity Construct recognizes that individuals have different preferences for equity and thus react differently to perceived equity and inequity. There are three specific main groups:

1. Benevolents (which we also dub "givers" to the benefit of the discussion): those who prefer their outcome/input ratios to be less than the outcome/input ratios of the "comparison other"; that is (O/I) < (O/I).

2. Equity Sensitives: those who conform to the traditional norm of equity and prefer that their outcome/input ratios be equal to those of the "comparison other"; that is (O/I) = (O/I).

3. Equity Sensitives: those who conform to the traditional norm of equity and prefer that their outcome/input ratios be equal to those of the "comparison other"; that is (O/I) = (O/I).

Our perceptions of our inputs and outcomes vis-à-vis those of others may be incorrect and such perceptions must be managed effectively. People tend to overestimate their own inputs and be oblivious to and thus underestimate the inputs of others. Moreover, the reactions to such misconceptions could depend on the type of person. For example, if a Benevolent (giver) feels their outputs are greater than their inputs, they may increase their effort to restore balance.

However, an Entitled (taker) may be fully content with disproportionately high rewards and can even adjust their evaluation scale and values to justify the disbalance.

Looking at the possible types of output–input ratios, there are, in essence, four possible combinations of how one's output could compare to one's input. They are: L/H, H/H, L/L and H/L, where H indicates High and L indicates Low. For instance, L/H indicates a scenario where one's perceived outputs are lower (L) relative to one's inputs (H). Combining these output/input ratio types with the typology of organizational employees mentioned earlier, we can generalize that a Benevolent would favor the first alternative (L/H), Entitleds would strive to attain the last option (H/L) and Equity Sensitives would seek either H/H or L/L. Huseman et al. (1987) assume different relationships between the independent variable of perception of equity (from underrewarded to overrewarded perception) and the dependent variable of job satisfaction for each of the three defined groups: the more the perception of overreward, the less the satisfaction for Benevolents' (givers); an inverted U-shaped relationship between Equity Sensitives' perceptions of equity and job satisfaction; the more the perception of over reward the more the satisfaction for Entitleds' (takers).

2.2 Research that supports and further develops Adams' equity theory

ET has received support from experiments conducted in the 1960s by Adams and his associates – importantly, with specific reference to the most controversial aspect of the theory, namely, the predicted effects of overrewarded inequity. Using a sample of students temporarily employed by the university placement office for marketing research, Adams and Rosenbaum (1962) showed that an experimentally induced sense of guilt (i.e. stating they were not entirely qualified for the job), as compared to a control group, led to an increase in the individual productivity to restore equity. Adams also compared piece-rate payments in terms of the quantity of output, fixed hourly compensation rates and output quality, which corroborates ET (Adams and Rosenbaum, 1962). Furthermore, Adams and Jacobsen (1964) conducted an experiment using a sample of students employed for proofreading, which used quality and quantity of output to characterize conditions of equity/inequity and employment security. Interestingly, and perhaps unexpectedly, ET predictions held true even under the conditions of job insecurity.

Also, Adams (1968) studied economically deprived workers and found that they can systematically produce large quantities of relatively lower-quality work with the only objective of maximizing outcomes. Therefore, the aim of ET is not to deny that maximizing outcomes is a powerful determinant of behavior but rather that there is ample experimental evidence showing that the desire to achieve justice has a considerable effect on behavior.

O'Reilly and Puffer (1989) found that employees' motivation increases when coworkers receive appropriate sanctions for their undesired behavior. That is, the satisfaction and motivation of a group increase when a high-performing group member gets rewarded or when a poor-performing group member is penalized.

More recently, the theoretical foundations of ET were discussed by Cheng et al. (2020), who examined cyberloafing in the workplace from the perspective of perceived overqualification among civil servants, drawing on ET. These authors properly acknowledged the existing research to combine both the perspectives of ET and cyberloafing (we adopt a similar view but combine ET and GVTs). Further developments in ET have evidenced the difficulty of precise construct measurement and the importance of defining what constitutes an input and an outcome because standards, perceptions and referents people use for comparison change over time and contexts

(Kulik and Ambrose, 1992). The equity-sensitive concept proved to be valid in other studies (Kickul and Lester, 2001; Wheeler, 2002; Yamaguchi, 2003) and has already been applied to teachers' (Prieto et al., 2023) and students' samples, such as business students in the USA and the Czech Republic, showing a consistently higher level of Entitleds among European students (Mueller and Clarke, 1998). ET has had important applications in management studies: to explain organizational behavior in specific national contexts (Buzea, 2014); for cross-cultural comparisons (Yoon and Almond, 2022); to understand job satisfaction for age-diverse workforces (Kollmann et al., 2020); to investigate customer attitudes toward insurance frauds (Tseng and Kuo, 2014); to study cognitive processes and casual schemes to justify exchange outcomes (Arvanitis and Hantzi, 2016); to understand the challenges of workforce localization of health-care professionals in an international context (Ryan, 2023); to examine the association between (in)congruence in employee and peer overqualification and perceived insider status (Li et al., 2023); to explore the congruence effect of perceived self-overqualification and perceived coworker-overqualification (Chu, 2021).

2.3 Criticism of Adam's equity theory

ET received considerable criticism for both its assumptions and practical applications. One main issue revolves around the model's simplicity and is linked to the number of demographic and psychological variables affecting the individuals' perceptions of fairness, which may change how people interact with others. If the subjective perceptions of output/input ratio can so easily be affected by demographics or personality, how useful is the theory?

Similarly, Huseman et al. (1987) question the ET's external validity. As ET is grounded on propositions generated by experiments in a controlled environment, some questions exist regarding its applicability to real-world situations. Likewise, Carrell and Dittrich (1978) posit that individuals might perceive equity not only in terms of the specific outcomes and inputs but also in terms of the overall system that regulates and operationalizes such outputs and inputs. In that sense, a person might feel that compensation is equitable to a "comparison other", but might consider the global compensation system unfair.

In that manner, Huseman et al. (1987) also posit that national differences, demographic variables (e.g. gender) and personality traits are important variables that enable us to understand the distinct manners by which individuals assess outcomes to themselves or others. For instance, national differences in assessment preferences are well documented in Chinese and US business organizations (Chen, 1995). In addition, employees can adjust for purchasing power and local market conditions. For illustration, an employee from a developing country might accept a lower salary than his colleague in America if the cost of living is lower, whereas an employee in Africa might accept a completely different compensation package.

Moreover, organizational culture (be it economically oriented, relationship-oriented or personal development-oriented) determines the distribution principle (equity, equality or need) the group members use to allocate resources (Mannix et al., 1995). Bakhshi et al. (2009) concur by stating that perceived organizational justice is an important antecedent of individual behavior and Vecchio (1981) shows that the individual's moral maturity moderates the ET performance.

In the next section, given our interest in GVT processes in terms of ET behavior, the hypotheses will be laid out to define the possible effects of ET in GVTs.

2.4 Hypotheses development for equity theory in global virtual teams context

Given the importance of ET and that several researchers proposed advances in our knowledge on the theme, there is ample justification regarding our interest in probing the research further in that innovative work setting of online, international teamwork that has become the new normal workplace in International Business (Tavoletti and Taras, 2022) and where ET has never been tested. In fact, no other published research applied ET to the virtual environment except for Cheng et al. (2020), who investigated a positive relationship between perceived overqualification and cyberloafing, and Lim's (2020) work on online buying. The present study seeks to fill this gap.

Virtual environments provide several benefits compared to the traditional in-person context: no need to commute, the possibility to hire talent regardless of geographic location (particularly suitable for short-term projects) and a 24-h working day, thanks to time zones. However, GVTs also pose some research challenges: fewer interpersonal interactions since virtual tools are "lean" media; much of the information transmitted is nonverbal; communication via e-mail or online means that gestures, mimics and context may be lost; less cohesion and trust among team members; and difficulty observing and evaluating the quantity and quality of individual contributions. The advantages and disadvantages of GVT collaboration have been debated and systematized (Bergiel et al., 2008), and the literature on GVTs is already vast (Tavoletti and Taras, 2022), but the relevance of ET in GVTs has never been tested.

Accordingly, this paper investigates whether the ET holds in the GVTs settings. Specifically, we tested the validity of the ET theory in GVTs, by following Huseman et al. (1987) and replicating the original study (carried out in a traditional work environment) to the GVT context. Therefore, the research question we are trying to address is whether and to what extent ET still provides a sound theoretical foundation for explaining employees' satisfaction, motivation and organizational commitment, or – conversely – if emerging behaviors, traits and other work-related attitudes deteriorate the requirements for an effective and objective assessment of input-reward ratios.

Importantly, as GVTs' frame of reference is generally limited to subjective peer and SE (Tavoletti et al., 2023), the importance of this research becomes evident from the perspective of the special nature of the GVT processes. Hence, one main contribution is the discussion of how the findings from our study help develop ET theory further. To that end, we use a large sample of GVTs to test ET's predictions and to verify whether it still applies to peer and SE evaluations of performance.

Authors like Davlembayeva and Alamanos (2022) and Miles et al. (1994) have confirmed the inverted U-shaped relationship between Equity Sensitives' perception of equity and job satisfaction in GVTs, the direct relationship for Entitleds and the inverted relationship for Benevolents.

The following considerations are made to support the following hypotheses.

It should be noted that all three propositions were initially laid out by Huseman et al. (1987) and our objective is to empirically test them in the context of GVTs. As Huseman et al. (1987) pointed out, Benevolents' perceptions of equity and job satisfaction have a negative, linear relationship. Accordingly, we propose:

H1.   There is a negative, linear relationship between Benevolents' perceptions of equity and job satisfaction in GVTs.

Similarly, the same authors reveal an inverted U-shaped relationship between Equity Sensitives' perceptions of equity and job satisfaction in GVTs. Therefore, we propose:

H2.   There is an inverted U-shaped relationship between Equity Sensitives' perceptions of equity and job satisfaction in GVTs.

Finally, for Huseman et al. (1987), there is a positive, linear relationship between Entitleds' perceptions of equity and job satisfaction in GVTs. Accordingly, we propose:

H3.   There is a positive, linear relationship between Entitleds' perceptions of equity and job satisfaction in GVTs.

Therefore, we aim to operationalize a new method to test whether the desire to achieve justice significantly affects GVT behavior and determine whether differences with traditional work settings exist.

PE and SE are critical to developing a performance appraisal method in GVTs. Self and peer performance evaluations are inherently subjective. However, at the core of ET, and in the absence of quantifiable input, the output–input ratio essentially becomes the peer-evaluated contribution vs self-evaluated contribution. Hence, in the context of GVTs working on consulting projects, ET is left with assessing peer versus self-performance evaluations.

The protocol for testing these hypotheses is as follows:

Step 1:

- Identify Benevolents, Equity Sensitives and Entitleds in our sample, calculating O/I for all the teammates; calculate (median O/I) at the team level.
- If O/I > (median O/I) → Benevolent ("givers"): those who prefer their outcome/input ratios to be less than the outcome/input ratios of the team median.
- If O/I = (median O/I) → Equity Sensitive: those who conform to the traditional equity norm and prefer their outcome/input ratios to be equal to the team median.
- If O/I < (median O/I) → Entitled: those who prefer their outcome/input ratios to exceed ratios of the team median.

Step 2:

- Analyze any correlations between controls (age, gender, readiness, English skills, cultural quotient) and Benevolents, Equity Sensitives and Entitleds.

Step 3:

- Test H1, H2 and H3.

Step 4:

- Discuss the results.

The next section describes the adopted methods, measures and sampling procedures.

To summarize, this study aims to revisit the applicability of ET in the context of the modern workplace in light of the challenges brought about in terms of intellectual contributions, online collaboration and geographic dispersion. These elements pose difficulties in observing teamwork efforts, time dedicated to the job and individual inputs.

3. Methods

3.1 Sample and study context

In this section, we describe in detail the data used in the study to test our research hypotheses and the procedures used to collect and analyze this information. Data was sourced from the X-Culture project, a large-scale international virtual collaboration initiative that aims to produce a consulting and collaboration service. Typically, over 5,000 MBA and undergraduate business students from more than 80 countries participate in X-Culture every semester. These students are assigned to multicultural GVTs, whose members are from different countries, and are asked to solve real-life business challenges for organizations in various locations worldwide.

Around a dozen companies present real-life international business challenges, and the thousand or so GVTs spend eight weeks developing solutions. Typically, the task involves designing a foreign market entry strategy, complete with market research and competition analysis, marketing strategy, research into trade regulations, HR practices, logistics and other related issues. As reported by the best literature, this is the largest and most representative data set to study GVTs and is a widely recognized "early-stage research lab" (Stahl and Maznevski, 2021).

Data was sourced from multiple sources, including participants, expert evaluations from professors who evaluated the final project report's quality and the team members' peer evaluations (PE). Most of the data are collected by weekly surveys, and multiple descriptions of the project, its surveys, validity and reliability of adopted scales, and reliability and management of biases are available in the literature (Taras et al., 2013; Tavoletti et al., 2022b; Tavoletti et al., 2023).

Initially, the sample consisted of 2,279 teams comprising 10,427 students who participated in the X-Culture project in 2019. However, to ensure that missing data would not jeopardize the effectiveness of the ET model tested (by influencing our analysis or skewing students' PE), our research followed the recommendations from Dawson (2003) to handle the teams for which some of the data were missing. Specifically, teams with a sample ratio (SR = (N − n)/Nn, with N = group size, n = number of responses) above 0.10 were removed. The same author suggests that scores of teams with SR = 0.32 or lower are significantly correlated; hence, a cut-off of 0.10 represents an even stricter cut-off criterion. Consequently, the final sample consists of 1,343 GVTs (or 6,347 students), with team sizes ranging from 3 to 8 (average 4.7). These students were from 137 countries. The average age in our sample was 22.3, of which 50.7% were female, and 25.7% had a master's degree and above.

Given that the GVTs are composed of students with limited working experience, it is only natural for the question to arise regarding the decision to use this particular population for this research and ask whether the findings of this study would apply to a real workplace environment. To address such concerns about the ability to generalize our findings, it should be noted that the undergraduate and graduate participants possessed considerable work experience and worked on a real-life consulting project under conditions similar to a work-life project. Moreover, the literature review has documented a tradition of students' samples in ET.

In addition, it is important to remember that, when studying GVTs, it is notoriously difficult to obtain a sample of teams working on the same project at the same time under the same conditions and still collect relevant data. This study did allow the possibility of examining the unique situation of having participants from 137 different countries. Moreover, convenience samples are the only option that researchers can resort to. Importantly, we conclude that the threat to the generalizability of findings based on our sample is likely minimal.

First, although the participants in our study were slightly younger than their corporate counterparts, many were in their thirties and even forties. About a third of the participants were graduate students in MBA or EMBA programs; most undergraduate students were in their last year of studies. Moreover, 71% have work experience and 57% hold a job. Most are already organizational employees, and the rest will join the labor force within a year or so. It is unlikely that their cultural values will drastically change at that time.

Most importantly, age did not significantly correlate with our key variables, suggesting that our findings are not due to the maturation effect. Second, the project and work design very closely resembled the real workplace. The students worked on real-life business challenges presented by real-life companies. Like in real corporate project teams, the students in this study relied on the communication and collaboration tools commonly found in the real workplace, such as e-mail, Skype, Google Docs, Dropbox, Doodle and Facebook chat. The team members interacted daily for an extended time (two months), which is a typical project length in the corporate world. Furthermore, the international cross-cultural settings, time zone differences and the need to rely on online communication were as real as in any GVT.

Finally, the stakes were very high, and the project was effectively temporary employment for the client organization. The project accounted for 30%–70% of the course grade. A failure on the project usually meant a failure in the course, resulting in negative effects on future career and earning prospects. The members of the best teams were invited to an annual symposium and most attendees received travel stipends. Although no guaranteed pay was associated with the work, students invested in the project, and many companies offered after-market commission and often prospects of internships and jobs for the best students.

3.2 Measures

PE and SE Scores. After the project's conclusion, students participated in PE and SE. They assessed their teammates and themselves using five criteria: communication, effort, leadership, creative ideas and friendliness. The sample questions are: "Does s/he seem helpful and hard-working?", "Is s/he nice, friendly, and positive?" The assessments used a five-point scale (1 = "poor" and 5 = "excellent"). Participants' SE scores represent the mean value across all SE dimensions for our research. Similarly, PE scores denote the average evaluation scores from all peers across all evaluated criteria.

Equity ratio (or perception of equity). It is measured using the equity ratio (O/I), which is calculated using the average of a student's PE divided by their average SE:

$$\text{Equity ratio} = O(PE)/I(SE)$$

In our study, we use the average PE as a proxy of individual output "O". PE is the main individual performance indicator; on average, it accounts for 30% of students' total grades and instructors use it to evaluate students' contribution so that it represents the main individual output. Grades play a

similar role as compensation for workers, and in the context of online teamwork, PE is the only available individual measure of individual output and the most widely adopted (Tavoletti et al., 2019, 2023). In contrast, SE is considered the input "I" because SE is the self-evaluated individual contribution. PE and SE data were collected at the end of the project and measured using a five-point Likert scale along the following dimensions: friendliness, communication, role, effort, English language skills, innovation, leadership, tech skills, work ethic and percentage of work done. The literature comparing SE and PE in GVTs is vast and consolidated (Taras et al., 2021; Davaei et al., 2022).

Sensitivity to equity groups. There are different ways of measuring individual differences from the perspective of how people view situations of inequity. This includes the equity sensitivity instrument (Huseman et al., 1985, 1987); the equity preference questionnaire (Sauley and Bedeian, 2000); and the most recent multidimensional view of the equity sensitivity construct (Davison and Bing, 2008). Although support for the validity of all three approaches has been reported (Taylor et al., 2009), they all appear to display some difficulty in their respective operationalization in GVTs (Foote and Harmon, 2006). Due to this, we concluded that it would be optimal not to use any of the aforementioned scales.

Instead, following ET extant theory, we created three equity groups, comparing the individual equity ratio to the teams' mean equity ratio (Huseman et al., 1987). Specifically, the Equity Sensitives are the individuals whose O/I ratios are equal to the team median, the Benevolents are the ones with O/I ratios lower than the team median and the Entitles have larger O/I ratios than their team median. The Sensitives were challenging to define among these three groups because all the O/I ratios are calculated scores (O/I = PE/SE). Thus, it would end up with very few students with O/I ratios exactly equal to the team medium. Therefore, we took a "loose match" approach and rounded the difference score between students' O/I ratios and team median to one decimal place. So then an individual would belong to the Sensitive group if such a difference score for them is approximately equal to 0. Similarly, individuals are considered Benevolents if the difference between students' O/I ratios and team median is below 0 and Entitleds if the difference is above 0.

The distribution of the three equity groups is as follows and offers an almost equal distribution into the three groups as it is reasonable for a concept of equity that is developed in comparison to other individuals in the GVT Table 1.

Job Satisfaction was measured at the end of the project, using one survey item: "In general, how HAPPY are you with the tasks you had to complete?" with a five-point Likert scale (1 = very unhappy, 5 = very happy).

Controls. The study controlled for participants' age, gender, readiness and English language skills. Readiness refers to each student's preparedness level before the project starts, as measured by a test assessing their understanding of project parameters and procedures. A mini TOEFL test evaluates English language skills (20 TOEFL-style multiple-choice questions testing the knowledge of English grammar, vocabulary and reading comprehension).

The results were tested using SPSS. We ran multiple regression models based on subsamples containing only one of these equity groups: Benevolents, Equity Sensitives and Entitleds.

4. Results

Descriptive and correlation results are shown in Table 2. H1 and H3 are not supported – quite the opposite, statistically significant opposite effects are reported. Table 3 and Figure 1 show a significant positive relationship between Benevolents' perceptions of equity and job satisfaction ($\beta = 0.183$, $p < 0.001$). As for Entitleds, the relationship between their perceptions of equity and satisfaction is negative ($\beta = -0.081$, $p < 0.05$).

Our H2 was tested using linear regression with a subsample containing Equity Sensitives and is supported. The squared term is significant. Therefore, as shown in Figure 2, the Equity Sensitives experience increasing satisfaction when they move from being underrewarded to being equitably rewarded, and their satisfaction starts dropping once they start being overrewarded. This finding aligns with the inverted U-shaped curve proposed by Huseman et al. (1987).

Table 1. Distribution of equity groups

Equity groups	Frequency	%
Valid		
Benevolents	2045	32.21
Equity Sensitives	2145	33.80
Entitleds	2157	33.99
Total	6347	100.0

Source: Authors' own creation

Therefore, the Equity Sensitives behave according to the expectations and follow the ET precept. The key finding and difference in GVTs compared to traditional work settings is that the statistically significant relationship between job satisfaction and equity perception has the opposite sign: Benevolents ("givers") always increase satisfaction when moving from underrewarded to overrewarded, whereas the opposite happens for Entitled ("takers") Table 4.

Table 2. Correlation results

Variables	Mean	SD	1	2	3	4	5
1. Equity ratio	0.853	0.156	1				
2. Job satisfaction	4.190	0.836	-0.090**	1			
3. Age	22.273	4.302	0.009	0.035**	1		
4. Gender	0.493	0.500	-0.129**	-0.036**	0.040**	1	
5. English skills	9.156	1.070	0.038	-0.047**	0.018	0.012	1
6. Readiness test	85.287	13.124	0.072	-0.016	0.148**	-0.033	0.205**

Note: **Correlation is significant at the 0.01 level (two-tailed)
Source: Authors' own creation

Table 3. Results of the multiple regression model

| Variables	Benevolents		Entitleds		Sensitives	
	Beta	Sig	Beta	Sig	Beta	Sig
Age	0.011	0.770	0.039	0.279	0.062	0.076
Gender	-0.008	0.837	-0.043	0.231	-0.029	0.40.
English skills (obj.)	-0.021	0.584	-0.043	0.249	-0.080	0.024
Readiness test	-0.027	0.488	0.013	0.726	0.012	0.736
Self-ratio	0.183	0.000	-0.081	0.025	2.336	0.000
Self-ratio sqr.	-	-	-	-	-2.134	0.001
R square	0.033		0.011		0.065	
Dependent variable: satisfaction						

Source: Authors' own creation
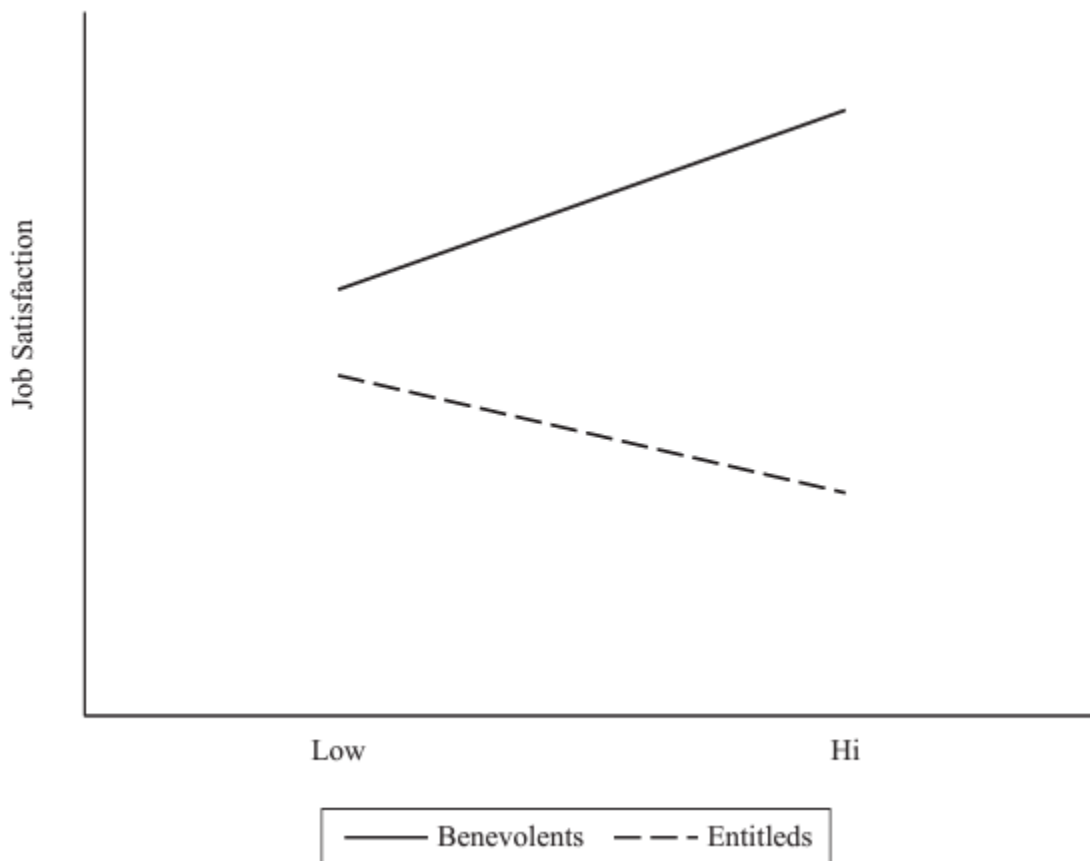
Notes: Low = under rewarded; high = overrewarded
Source: Authors' own creation
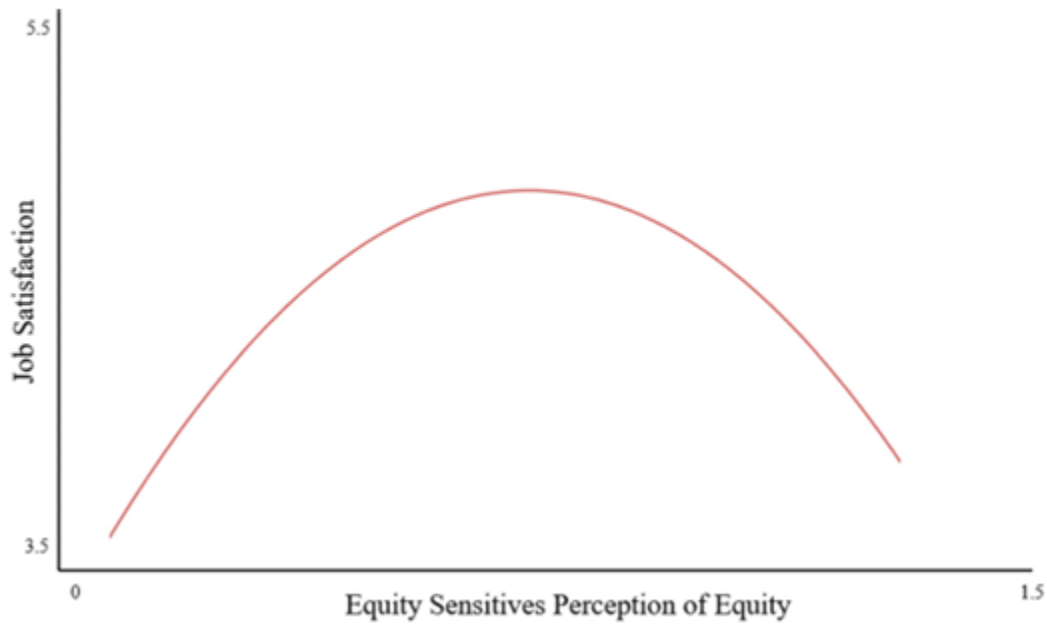
Source: Authors' own creation

Table 4. Verification of hypotheses

H1	Not supported (significant with opposite sign)
H2	Supported
H3	Not supported (significant with opposite sign)

Source: Authors' own creation

5. Discussion

5.1 Theoretical contribution: global virtual team a difficult place for "Entitleds" (takers)

ET has significant implications in terms of employee retention, morale, productivity, relationships and psychological well-being, the latter point being particularly expressive since mental health issues at work are on the rise, particularly in the aftermath of the COVID-19 pandemic and telework (Tavoletti, 2020; Tavoletti and Taras, 2022). In addition, as authors such as Kickul and Lester (2001), Wheeler (2002) and Yamaguchi (2003) point out, there is an increasing emphasis on conducting work in GVTs implies that social comparison processes, such as the Equity Sensitivity Construct, will become increasingly influential in determining team objectives. Accordingly, understanding the mechanisms that help us clarify how these comparisons are made provides a valuable contribution to enhancing the effectiveness and outcomes of any organization.

In terms of the research findings, the empirical tests reveal that the effects of ET in traditional work settings differ from those in the GVT context, with the main difference being that satisfaction in GVTs is always higher for givers (Benevolents) than for takers (Entitleds). Furthermore, satisfaction is positively associated with overrewarding for givers and negatively associated with over-rewarding for takers (Figure 1). Hence, we conclude that GVTs produce an environment whereby givers will always experience a higher and growing satisfaction than takers. This is a highly relevant conclusion as it creates new information pertinent to the current business environment, even more so given the nature of remote, highly collaborative teamwork.

The findings of this study have important implications for future research and practice and are relevant for society at large. Gaps in the body of knowledge are thus bridged and a clear connection is laid between the theory and practice. That way, research can directly yield relevant economic and commercial impact for the organization. At the same time, these findings can be used for training, teaching and influencing public policy to influence public attitudes to improve the quality of life of GVT team members.

The explanation lies in the highly interdependent nature of intellectual work in GVTs, which renders it virtually impossible to identify individual contributions separately and makes Entitleds dissatisfied with the idea of other teammates exploiting their contribution. The stricter they evaluate themselves compared to their teammates' evaluations (so the higher the equity ratio), the less their job satisfaction. Our findings corroborate the notion that we live in a modern, postindustrial world that is highly dependent on team collaboration, specialization and division of labor – particularly collaborative intellectual work.

In fact, and in line with the work of Morand and Merriman (2012), our findings corroborate the idea that the combination of cultural elements and team dynamics produces a downplay of differential inputs to create a motivated harmony, which – consciously or unconsciously – aims to reward all participants equally, or at least to some degree. In other words, in the GVT context, the empirical evidence from this study points to an even and balanced process of assessing Equity and Fairness. In that sense, our findings show a higher satisfaction derived from being a Benevolent ("giver") in the GVT context. In contrast, no expectation feeds what the Entileds are used to expecting (as a specific recognition for their alleged superior contribution).

This is quite an interesting point because most of the debate in business organizations hinges on equity-based reasoning, whereby the different input levels should receive different rewards as output. However, despite being underestimated, many popular organizational practices move toward "existential-based equality": this view does not postulate that business organizations reward equally different inputs or pretend inputs to be equal because it is impossible to measure differences. Rather, equality-based distributive decisions are theoretically grounded in the notion of equal contributions in an existential sense and not solely due to measurement considerations (Morand and Merriman, 2012).

A collection of managerial practices is becoming increasingly popular in many modern business organizations (and even more so in GVTs), whereby the opportunity for status and symbolic differentiations has been greatly diminished. This orientation is corroborated by academic research and practice that reinforces the importance of ET in the workplace because it embodies the balance between how employees feel about their work and how hard they should work. In addition, fairness in the workplace has been mandated by law in some countries (such as the UK's Equality Act of 2010); therefore, employers are responsible for ensuring that employees receive equitable and fair treatment. In light of our research findings, employers should reward GVT members equally and refrain from giving excessive importance to overrewards for Entitleds.

Examples of "status leveling" (Morand, 2010; Walton, 1985) or 'symbolic egalitarianism' (Pfeffer, 1995) are linked to the elimination of perks, differential office and parking space, forms of address, linguistic honorifics, job titles, differential washrooms and elevators, segregated restaurants and cafeterias, differential dress codes, or any other perquisite, special right or privilege enjoyed as a result of one's position. In addition, GVTs, due to teamwork and online activity, offer far fewer opportunities for individual recognition than the traditional work environment, where ET has been developed (Bergiel et al., 2008).

Existential-based equality challenges pay disparities, such as the staggering differentials between top executives and other employees, and improves satisfaction in intellectual teamwork by taking the form of the Benevolents' approach in self and peer performance assessments. Conversely, Entitleds are even frustrated by the idea of a team reward, and their frustration grows in GVTs, where the character of international virtual collaboration further limits opportunities for monitoring individual performance and granting personal recognition. Bakhshi et al. (2009) corroborate this notion by positing that personal outcomes (i.e. pay and job satisfaction) are linked to procedural justice, defined as how recognition is distributed to employees.

Our findings show the positive effects on the satisfaction of equality-based evaluations – as opposed to the vast research on equity-based assessment, in the context of the growing importance of distributive justice in business organizations. This body of knowledge suggests that an "equality theory" might substitute "equity theory" in GVTs because the main purpose of evaluations in teamwork is not to grant the fair share of individual recognition each one deserves but to achieve a context where everyone is an esteemed and recognized participant.

ET has linkages with Social Egalitarianism, which posits that every person is equal in fundamental worth and moral status, advocating the elimination of concrete or abstract barriers among people – be they of economic, social or financial nature or centralization of power. Thus, in the past, the discussion of Social Egalitarianism brought about questions of equality of distribution and evaluations, which might have disturbed some constituents and directly confronted established theory and practice (Cowherd and Levine, 1992). However, the same may be said for the now-accepted "symbolic egalitarianism" when it was introduced in the scholarly debate and business practice (Pfeffer, 1995).

5.2 Future research paths, limitations and implications for managerial practice

Hence, future research might investigate the damages that an excessive focus on individual evaluation would produce to satisfaction and performance in GVTs. Recent literature on biases in peer performance evaluations and team cohesion (Tavoletti et al., 2019, 2022a, 2022b) suggest that GVTs comprise a fragile organizational setting in which the team-level dimension of performance and team cohesion should be given priority, as opposed to emphasizing the very biased individual level of performance. ET can be a promising frame to address the issue of measuring individual performance in GVTs beyond the limits of the present manuscript, whose empirical base is limited to a student sample from a consulting project that is especially useful as a widely recognized "early-stage research lab" (Stahl and Maznevski, 2021, p. 12).

Importantly, although we do not underestimate the importance of meritocracy as a major driver of organizational performance (as well as the notion that contributions of different value should rightly result in different outcomes), we do wish to underline the fact that each organizational setting has to find a balance between an individualistic orientation, and a common, team-level orientation, in which the individual interest has to take into account a superior mission and goals (Rousseau and Arthur, 1999).

One final comment regarding the terms of the substantive contribution to the extant literature deals with the specific topics analyzed in this paper. Specifically, it should be noted that – as guardians of the well-being of staff and the organization's climate – human resource managers will greatly benefit from the knowledge that attention must be given to the selection process for GVTs, with careful identification of entitled profiles. It is also posited that preliminary readiness tests should be adopted to identify such profiles.

Finally, the known personality traits of the Big Five model (Barrick and Mount, 1991) are a promising avenue of research to determine the best configuration of personalities for GVT collaboration across different national cultures.

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