The GRID scale: a new tool for measuring service mixed satisfaction

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The GRID Scale: a New Tool for Measuring Service Mixed Satisfaction

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Abstract

Purpose – This study evaluates a bidimensional tool to measure overall service satisfaction: the Evaluative Space Grid (GRID scale). The GRID scale provides a common measure for both positivity and negativity through 25 grid cells. The authors propose to use the GRID scale as an integrated measure of both satisfaction and dissatisfaction to capture mixed reactions, or ambivalence.

Design/Methodology/Approach – Within a cross sectional between-subjects survey design, this study compares overall satisfaction with bank services as measured on the GRID scale versus a traditional semantic differential (SD) scale.

Findings – The results show that the GRID scale performs as well as the SD scale with respect to different criteria such as reliability and discriminant, convergent, nomological, and predictive validity. However it allows to measure separately indifference and ambivalence.

Practical implications – Such a distinction assists decision makers with recommendations on different strategies to not only create customer loyalty based on satisfaction but also encourages them to think how to decrease the levels of dissatisfaction and ambivalence.

Originality/value – The GRID scale would address survey needs of every business suffering from average performances. This tool provides them better in-depth overall satisfaction information especially regarding the "middle-ground" customers.

Keywords

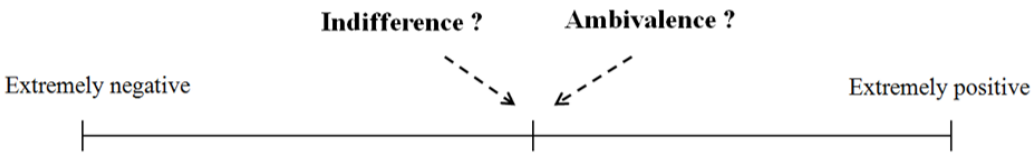
Overall service satisfaction measurement, Mixed feelings, Ambivalence, Indifference, Evaluative Space Grid, Semantic Differential Scale.

The GRID Scale: a New Tool for Measuring Service Mixed Satisfaction

The assessment of overall customer satisfaction is an important issue in marketing research and practice because it is considered as a barometer of business performance that predicts other key marketing variables, such as profit or loyalty (Haumann *et al.*, 2014; Homburg *et al.*, 2014; Peng *et al.*, 2014). Customer surveys generally begin with or include a measure of the overall fulfillment response resulting from consumption experience. One of the most popular ways to do this is to use a scale that ranges from "very dissatisfied" to "very satisfied" [1]. This type of scale, composed of a pair of antagonist adjectives at two extremities of a continuum, is referred to as a "semantic differential scale" (hereafter, SD scale). As this type of scale is easy to understand and requires minimal instruction when it is administered to naïve customers, it has been adopted by many companies and research institutes. For example, the five-point scale format is used by Amazon.com, the most visited commercial website worldwide, as well as by the well-known American Customer Satisfaction Index (Fornell *et al.*, 1996).

However, an important limitation of these scales has been pointed out in the literature. Midpoint ratings could result from two different evaluative processes or motivations: (1) the respondent elicits minimal concern for the topic involved in the statement, meaning that "there is low activation of either positive or negative evaluations" (Nowlis *et al.*, 2002), or (2) the respondent exhibits both significant positive and negative reactions (Nowlis *et al.*, 2002) because some features of the evaluated object are satisfying, whereas others are dissatisfying. In the first case, referred to in the literature as "indifference," a traditional SD scale should accurately reflect the evaluation because the respondent exhibits "neither positive nor negative reactions," (Kaplan, 1972) meaning that their evaluation is equidistant between the positive and negative extremities of the continuum. In the second case, referred to in the literature as "ambivalence," SD scales fail to accurately reflect the evaluation because it would be necessary for the respondent to simultaneously rate both ends of the continuum to record their mixed reactions. In other words, ambivalent evaluations are inappropriately aggregated with indifferent evaluations when SD scales are employed to measure overall evaluation as illustrated in Figure 1 (Kaplan, 1972; Nowlis *et al.*, 2002).

Figure 1. Responses aggregated into the midpoint of the SD scales



It is important that practitioners and marketing researchers address the issue of the distinction between indifferent and ambivalent responses for several reasons. First, indifferent and ambivalent evaluations result from different services failures (Tuten *et al.*, 1998); second, because a higher level of information processing characterizes ambivalent individuals compared with indifferent ones (Tang *et al.*, 2014); and third, because ambivalent and indifferent individuals have been associated with different behaviors (Thornton, 2011; Yoo, 2010). As a result, managerial recommendations would differ for these two categories of individuals.

The measurement of overall satisfaction in the service domain may especially suffer from the impossibility to separately capture ambivalent evaluations from indifferent ones. Indeed, ambivalence might be most likely to occur in "emotionally complex" situations (Larsen *et al.*, 2001) because it is influenced by the number of conflicting reactions (Priester *et al.*, 2007). Services are complex objects of evaluation (Oliver, 1997) and the assessment of satisfaction regarding a service experience at an overall level of evaluation supposes to process several and various pieces of information (Herzberg *et al.*, 1959). As a consequence, service satisfaction assessment at an overall level with a SD scale may result in simultaneous evaluations at both ends of the continuum [2]. Indeed, recent studies in the banking industry show that most customers feel ambivalent (Szűts *et al.*, 2008) or indifferent (Lam *et al.*, 2013) about their banks and that one of the main element of the problem is the difficulty of quantifying their attitudes and behaviors accurately.

In this research, we consider a new alternative rating scale to measure overall service satisfaction: the Evaluative Space Grid (Larsen *et al.*, 2009; hereafter, GRID scale). This instrument is a single measure of positivity and negativity within a

bidimensional matrix. One dimension is dedicated to the measurement of the respondent's degree of negativity (from "not at all negative" to "extremely negative"), and the other dimension is dedicated to the measurement of the respondent's degree of positivity (from "not at all positive" to "extremely positive"). The combination of the two dimensions allows the respondent to choose which of the GRID's 25 cells best describes its evaluation. The GRID scale has been validated in psychology with respect to unipolar measurement of positivity and negativity (Larsen *et al.*, 2009). Furthermore, Larsen and colleagues (2009) indicate that by combining the levels of positivity and negativity, the GRID scale provides a separate measure of indifference (low positivity; low negativity) and ambivalence (moderate to high positivity; moderate to high negativity). Since its validation, it has been used in several psychological studies to provide evidence for the coactivation of positivity and negativity in response to various types of stimuli (Cacioppo *et al.*, 2009; Larsen *et al.*, 2011; van Reekum *et al.*, 2011). However, there has been no assessment and validation of this tool in consumer behavior research. This study provides the first comparative assessment of the GRID scale with the SD scale, within the context of customer studies through an application that measures overall service satisfaction. In doing so, we provide several contributions.

First, at a methodological level, we extend the work on the validation of the GRID scale begun by Larsen and colleagues (2009) within another domain (overall satisfaction) and compare it for the first time with the SD scale. Furthermore, this study represents the first effort to use the GRID scale within a system of related constructs and thus, provides evidence on the nomological validity of the scale. Second, at a theoretical level, our study addresses the two-dimensional satisfaction approach (Herzberg *et al.*, 1959; Tuten *et al.*, 1998) by providing a comprehensive scale to measure the bidimensional nature of the construct. Unlike the SD scale, the GRID scale can independently and simultaneously assess the levels of satisfaction and dissatisfaction and automatically convey an internal weighting scheme that reflects the relative importance of each component measure. To do so, we develop a coding procedure for modeling satisfaction as a bidimensional structure. Third, at a practical level, we offer marketing researchers an expected solution to the midpoint problem of SD scales (Nowlis *et al.*, 2002) and respond to the need for research on the measurement of consumer ambivalence (Olsen, 1999; Zemborain *et al.*, 2007).

From this perspective, the GRID scale offers advantages over the SD scale because it immediately and spatially differentiates between four different types of evaluative reactions: satisfaction (high positive and low negative reactions), dissatisfaction (high negative and low positive reactions), ambivalence (moderate to high positive and moderate to high negative reactions), and indifference (low positive and low negative reactions). Such a distinction assists decision makers with recommendations on different strategies to not only create customer loyalty based on satisfaction but also encourages them to think how to decrease the levels of dissatisfaction and ambivalence.

The article is arranged as follows. We first review previous research regarding the bidimensional approach and its related evaluative states. This section is followed by a description of the existing methods used to capture the evaluative states, their limitations, and the relevance of our alternative approach in the context of services. A satisfaction survey is then conducted to compare the validity of the GRID scale with the SD scale within a cross sectional between-subjects survey design. Finally, we discuss the contributions and managerial implications of the study and offer important directions for future research.

Conceptual Framework

Bidimensional Approach to Satisfaction

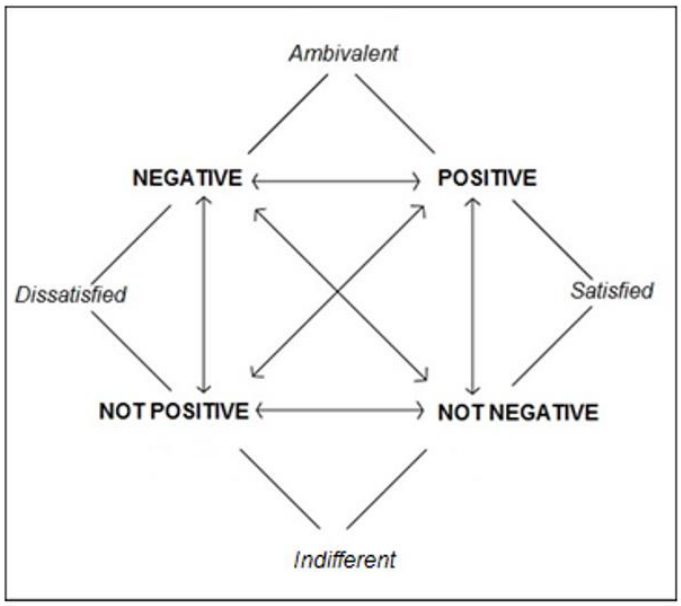
The traditional approach to the satisfaction construct assumes that dissatisfaction is the reciprocal of satisfaction. Several theoretical studies in the area of service satisfaction or loyalty define satisfaction as unidimensional and assess it as an overall reflective construct (Evanschitzky *et al.*, 2006; Lam *et al.*, 2004; Mittal *et al.*, 2001; Voss *et al.*, 1998). In this perspective, the more a person is satisfied, the less she or he is dissatisfied. Such an approach excludes mixed reactions or ambivalence (Kaplan, 1972).

To address this issue, the bidimensional approach regarding how to evaluate attitudinal objects proposes the conceptual separation of positive reactions from negative reactions. More precisely, psychological researches on the Evaluative Space Model (Cacioppo *et al.*, 2011; Cacioppo *et al.*, 1997) provides evidence that evaluative processes imply the activation of two separable and partially distinct components of the evaluative system: positivity and negativity. Indeed, different parts of the brain are

activated in reaction to positive and negative stimuli, which explains why it is possible for people to be happy and sad at the same time (Larsen *et al.*, 2011; Larsen *et al.*, 2014; Larsen *et al.*, 2001).

Thus, the bidimensional approach to evaluative reactions suggests moving from a two polar conceptualization (from "negative" to "positive") to a four polar conceptualization (from "not at all negative" to "extremely negative" and from "not at all positive" to "extremely positive"). This is exactly what the semiotic square allows one to do. Developed by Greimas (1987), the semiotic square is a tool dedicated to analyze relationships between paired concepts. It is used to refine an oppositional analysis by increasing the number of analytical classes stemming from a given opposition from two to four (this definition is adapted from Courtès, 1991, p. 152). Floch (1988) as well as Holt and Thompson (2004) used this tool in marketing research to elucidate apparent conceptual oppositions. We use this semiotic tool to analyze overall customer satisfaction reactions. The semiotic square that we propose in Figure 2 starts with the binary opposition of "negative" and "positive." It first posits the existence of two other concepts, namely "not negative" and "not positive." It also produces compound metaconcepts. When a customer evaluates an experience as "not positive" and/or "negative," this perception leads to a state of dissatisfaction. In the opposite situation, when an experience is perceived as "not negative" and/or "positive," a state of satisfaction results. The two remaining meta-concepts are more creative: when a customer perceives something as both "negative" and "positive," this results in a feeling of ambivalence. Conversely, when a consumer perceives something as "not negative" and "not positive," this results in a feeling of indifference. Hence, the semiotic square generates an enlargement of the concept of satisfaction by explicitly introducing indifference and ambivalence as distinct states of the overall scope of customer satisfaction.

Figure 2. The semiotic square of overall satisfaction



Indifference and Ambivalence as Different States

The proposed semiotic square underlines a conceptual distinction between indifference and ambivalence. Such a distinction also makes sense at an empirical level in view of the differential motivational impact resulting from indifferent and ambivalent evaluations.

Tang and colleagues (2014) indicate that mixed user content increases the curiosity of customers and their motivation to process additional information regarding users' experiences. In contrast, indifferent user content attenuates motivation to process additional information. This is consistent with the finding of Sengupta and Johar (2002), which states that people are motivated to resolve potential inconsistency between the different pieces of information, at least when they have easy access to the evaluative information. In other words, in situations of ambivalence, individuals are motivated to adopt an extensive process of information gathering to form an integrated evaluation. In these types of situations, ambivalent evaluations appear as good predictors of behavior.

In the domain of political opinions, ambivalent citizens are far more likely to vote in elections than are indifferent citizens. Surprisingly, the motivation of ambivalent

citizens to vote is as high as that for one-sided citizens. Indeed, contrary to indifferent citizens, ambivalent electors should not be considered as apolitical because they consider their electoral choice very seriously (Yoo, 2010). On the basis of these empirical findings and the theory-driven conceptualization of the constructs, we argue for the importance of capturing separately ambivalent and indifferent opinions when assessing the overall services satisfaction.

Relevance of Bidimensional Approach in Addressing the Measurement of Overall Service Satisfaction

The issue of the midpoint problem in SD scales is especially relevant at an overall measurement level because mixed reactions are more likely to occur when respondents have to process several pieces of information to form an integrated evaluation (Priester *et al.*, 1996). More precisely, because objects differ in complexity and propensity to generate ambivalent reactions (Dhar *et al.*, 2003), it might be more appropriate to change from the unidimensional to a bidimensional approach to improve measurement validity at an overall level. Moreover, tenants of the bidimensional approach include complex combination of emotions into the scope of mixed reactions, such as “fear by enjoyment” or “guilty pleasure” (Larsen *et al.*, 2014). Such an acceptance of mixed reactions only makes sense at an overall level of analysis because it can only result from the whole experience.

As we explained earlier, the bidimensional approach offers an interesting framework to study ambivalence. Intriguingly, except for two studies on retail establishments (Clarkson *et al.*, 2008; Penz *et al.*, 2011) and one study regarding a restaurant (Nowlis *et al.*, 2002), ambivalence literature has not deeply examined mixed reactions to services. This is especially surprising insofar as services, being complex objects of evaluation comprising a bundle of various attributes (Zeithaml, 1981), present interesting properties for studying ambivalence (Oliver, 1997). This is all the more true within the service-dominant logic proposed by Vargo and Lusch (2004a; 2004b). Such an integrative view of goods and services raises the problem of evaluation at an overall level. Indeed, the authors explain that service can be provided either directly or indirectly, i.e., through the provision of tangible goods. The former situation is especially likely to

generate reactions going simultaneously in both directions of the evaluative continuum. For example, in a restaurant, a customer can be both very satisfied with the "service provision" of a dish and very dissatisfied by the dish's taste.

Finally, the bidimensional approach is a well-accepted concept in the analysis of satisfaction. Since early studies by Herzberg and colleagues (1959) regarding employees' work motivations, this approach has been validated in several domains, such as marital satisfaction (Mattson *et al.*, 2007), patient satisfaction (Turner *et al.*, 2006), and services satisfaction (Tuten *et al.*, 1998). This body of work is built on Herzberg's two factors theory (1959), which highlights the difference between the motivational factors contributing to employee satisfaction in the case of success (opportunities for achievement, recognition, responsibility, advancement, etc.) and the hygiene factors contributing to employee dissatisfaction at work in the case of failure (pay, job security, physical working conditions, etc.). Tuten and August (1998) extend this pattern to services satisfaction. Although they do not directly refer to ambivalence, they note that a failure on hygiene factors (all the basic expected elements of the service) could result in a combination of dissatisfaction and satisfaction in the case of success on other attributes. Conversely, failure on motivational factors (all the element beyond the expected basic service) would not elicit any reaction of dissatisfaction (or satisfaction) because customers had no expectations towards them.

From this perspective, we argue that satisfaction is a natural marketing extension of the study of attitude within a bidimensional realm, as we highlighted with the semiotic square (Figure 2).

Existing Ways to Capture the Distinction between Indifference and Ambivalence and their Limitations

Previous researches developed several methods to measure ambivalence. Some methods comprise a direct measure of a subjective feeling of ambivalence experienced by the respondent toward the evaluated object. For example, the multi-items scale developed by Priester and Pettey (1996) measures how "mixed" respondents' feelings are or how much conflict or indecision they experience. Ambivalence can also be measured indirectly through separate evaluations of each attribute to highlight potential mixed reactions. However, these methods do not solve the problem of the aggregation of

indifference and ambivalence at the midpoint of SD scales at an overall measurement level.

To address this measurement problem, the most frequently used solution is the one proposed by Kaplan (1972). It consists in the integration of separate unipolar assessments of positive and negative reactions. This solution requires respondents to rate the two continua as two separate concepts. However, as satisfaction is commonly considered as the absolute antagonism of dissatisfaction (Potter *et al.*, 1997), respondents might be tempted to rate them symmetrically. In other words, this could result in a carryover effect between the two unipolar scales. To handle this problem, Kaplan (1972) suggests adding the following specific instructions before each assessment: "Considering only the positive (negative) qualities of the concept and ignoring its negative (positive) ones, evaluate how positive (negative) its positive (negative) qualities are on a 4-point unipolar positive (negative) scale." On the contrary, Russell and Carroll (1999) argue that the two unipolar scales could create an artificial level of ambivalence. Considering that respondents often confuse unipolar measures of positivity with bipolar measures of positivity and negativity, they propose the dichotomous-then-unipolar scales. This method begins with a dichotomous item: ''Do you feel satisfied?'' ("yes" or "no"); then, only those who check ''yes'' are asked to indicate how satisfied they feel on a 6-point scale, and reciprocally for dissatisfaction. Whatever the method used, these measures are designed to obtain two ratings for each activated component for combining them into a formula to highlight a potential ambivalent reaction. The interested reader is referred to Thompson, Zanna, and Griffin (1995); Priester and Petty (1996); and Priester and Petty (2001) for further information regarding the validity of the various proposed formulae.

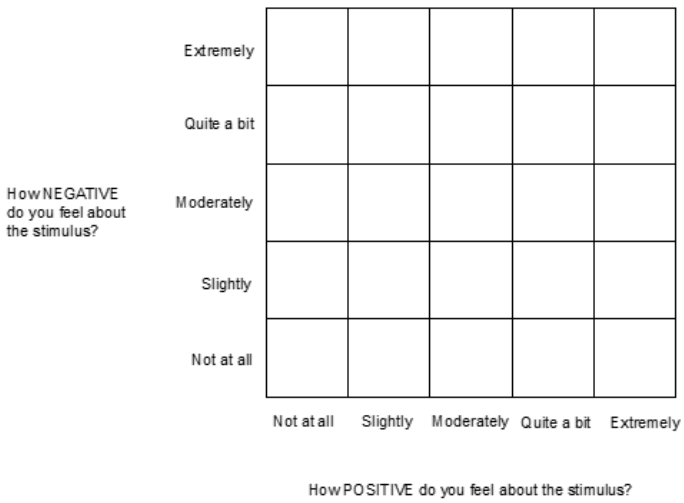
While the two unipolar continua solutions exhibit theoretical agreement for capturing the distinction between indifference and ambivalence, we noticed that in marketing research, other than a few studies focused on mixed reaction (e.g. Roster *et al.*, 2009; Zemborain *et al.*, 2007), it is never employed to measure overall evaluative reactions such as satisfaction. Indeed, Potter, Zautra, and Reich (1997) demonstrate that most laypeople believe that happiness and sadness are opposites and, therefore, cannot coexist. As a result, the use of two intuitively antagonistic items to calculate a single score is a methodological burden that benefits the persistence of SD scales.

Bidimensional Tool for Measuring Overall Service Satisfaction

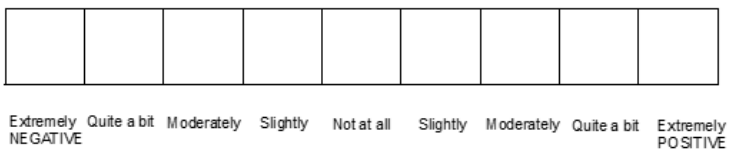
To tackle the shortcomings of traditional SD scales, we evaluate the GRID scale (Larsen *et al.*, 2009) as a possible solution that does not require the two-step rating of positivity and negativity induced by existing methods (Kaplan, 1972; Russell *et al.*, 1999). This instrument provides a single measure of positivity and negativity: the respondents are required to indicate how negative they feel along the vertical axis (from 0 = "not at all negative" to 4 = "extremely negative") and how positive they feel along the horizontal axis (from 0 = "not at all positive" to 4 = "extremely positive"). Respondents can choose which of the GRID's 25 cells best describes their evaluation.

Figure 3. The Evaluative Space GRID (GRID Scale; Larsen *et al.*, 2009) versus the Semantic Differential Scale (SD Scale)

a. GRID scale

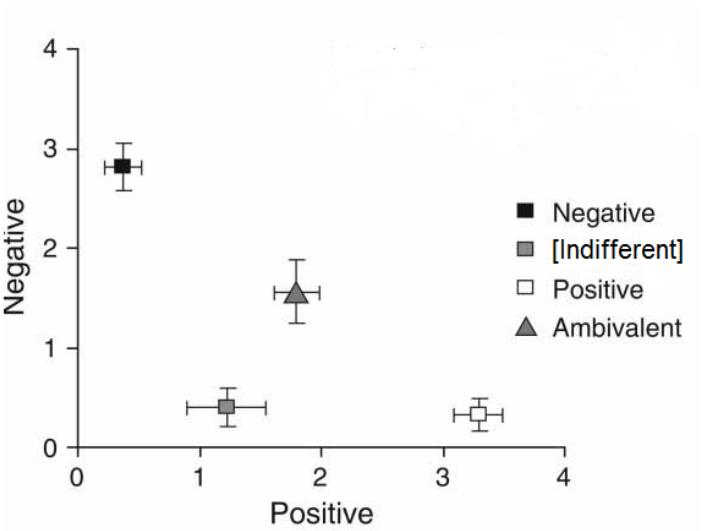


b. SD scale



Larsen and colleagues provide evidence for the convergent validity of their tool with the two unipolar continuums method (Kaplan, 1972) and the dichotomous-then-unipolar method (Russell *et al.*, 1999). They also demonstrate that their tool is capable of capturing the distinction between indifference and ambivalence through the combined levels of positivity and negativity. Indeed, they show that in this grid, indifferent stimuli are evaluated as low positivity or low negativity, whereas ambivalent stimuli are evaluated as moderately positive or moderately negative (Figure 4, source Larsen *et al.*, 2009).

Figure 4. Evaluation of positive, negative, ambivalent, and [indifferent] stimuli on the GRID scale (source: Larsen *et al.*, 2009)



Method

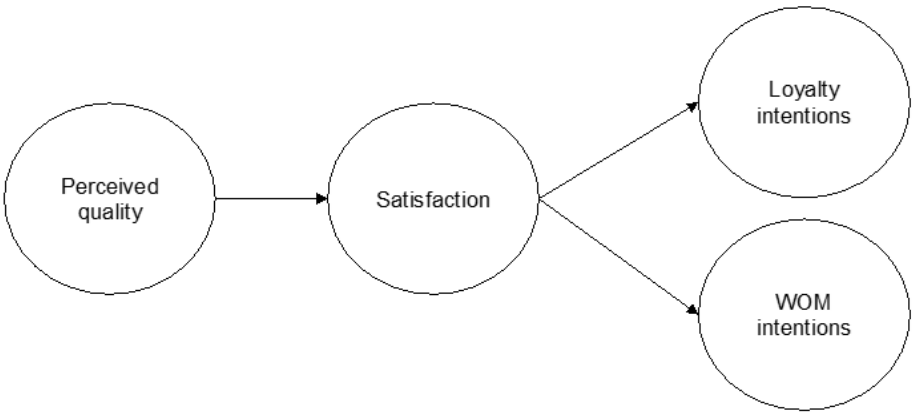
Overview of the study

This study aims to advance previous research by Larsen and colleagues (2009) who validated the GRID scale against the two unipolar continuums method and dichotomous-then-unipolar scales. Because it is the more frequently used tool to capture overall evaluation data (e.g., the ASCI or five-stars scales on commercial websites), we decided to empirically compare the GRID scale with the SD scale. More specifically, we tested the performance of the two scales in a satisfaction survey regarding bank services. This specific area of application was chosen after a focus group discussion conducted with seven marketing experts about their opinions of various services (online retailers,

traveling services, insurances, and banks). This selection followed from the observation that banking is the business that elicits the most mixed reactions among all the services discussed.

To fulfill our objectives, we used a well-known theoretical model that links satisfaction to perceived quality and behavioral intentions (Cronin *et al.*, 2000; Olsen, 2002; Taylor, 1997). Two classical behavioral intentions variables were considered: intention to be loyal and intention to generate positive word of mouth (hereafter WOM). From the literature satisfaction acts as a mediator between perceived quality and behavioral intentions. The relationships between quality, satisfaction, and behavioral intentions were expected to be all positive and significant (Anderson *et al.*, 1994; Cronin *et al.*, 2000; Szymanski *et al.*, 2001). The theoretical model used is shown in Figure 5.

Figure 5. The quality - satisfaction - behavioral intentions model



Design and Participants

We used a cross sectional between-subjects survey design with the two alternative tool of measuring satisfaction: the GRID scale and the SD scale. The between-subjects design was intended to prevent a potential carry-over effect that could result from the order in which the alternative tools were displayed in a within-subjects design. The participants were randomly divided into two groups. One group received the survey with the satisfaction construct measured using three general items rated on the GRID scale

(GRID scale sample). The other group received the same survey with the three satisfaction items rated on a SD scale (SD scale sample).

Data were collected by a professional market research institute through an online web survey sent to a sample of 3723 panelists. We asked for 400 participants, 200 for each sample (meaning a response rate of 10.7%). Random checks reduced the effective sample size used in the analysis to 153 for the GRID scale and 160 for the SD scale. These responses were identified by two criteria. The first was the response time recorded during survey completion (a timer was inserted in some pages of the online questionnaire): a very low response time reveals the fact that panelists did not take time to read the instructions before answering and randomly checked a response (i.e., less than three seconds for a question page for the SD scale sample and less than five seconds for an instruction page—see Appendix 1—along with a question page for the GRID scale sample). The second criterion was randomness of responses: this includes any approach in which "responses are made without regard to item content" (Graham, 1993, p.38): a similar answer for two reversed items or the systematic selection of the same answer throughout the whole questionnaire reflects random responding.

There was no significant difference in the random answer rate between the two scale formats. The respondents' gender was well balanced between the two samples (52% female), and their ages were limited to between 30 and 40 to ensure that subjects were involved in a relationship with a bank (average age: 36 years old). In addition, the participants were asked to focus their evaluation only on their main bank, that is, to focus on the bank with which they were more frequently in contact.

Questionnaire and Measures

Two versions of the online questionnaire were developed. To prevent carry-over effects, we placed the evaluation of overall customer satisfaction before the evaluation of perceived quality of attributes (Bickart, 1993). Thus, the displayed first screen contained the overall customer satisfaction evaluation, while the following pages contained questions concerning perceptions of the quality of bank service. Questions on behavioral intentions were placed at the end of the survey, just before socio-demographic measures. The only difference between the two questionnaires was the scale used to rate the overall

satisfaction items. As it is a novel measurement tool, short indications for use preceded the satisfaction evaluation for the GRID scale sample (Appendix 1).

Perceived quality. Customers' evaluation of perceived quality was defined and measured as an evaluation of attribute performance (Oliver, 1997). We used the bank quality 20-item scale from the study by Karatepe et al. (2005) to assess a higher-order construct of perceived quality defined by four facets of quality perceptions: perceived quality of service environment (four items), quality of interaction (seven items), empathy (five items), and reliability (four items) (Table 1).

Customer satisfaction. To simplify our protocol, we chose a direct measure of customer satisfaction, as proposed by the "performance-based" approach (Cronin *et al.*, 1992). In this perspective, expressed responses directly address expectations. More precisely, satisfaction was measured using a multi-item scale composed of three well-established pairs of opposite adjectives measuring satisfaction: "negative opinion–positive opinion," "dissatisfied–satisfied," and "unfavorable–favorable" (Table 1; Anderson *et al.*, 2003; Evanschitzky *et al.*, 2006; Lam *et al.*, 2004; Mittal *et al.*, 1998) [3]. The respondents were asked to indicate their overall satisfaction reaction toward the service provided by their bank on 25-point grids (GRID scale sample) or 9-point SD scales (SD scale sample). Appendix 1 provides an example of the measurement of overall satisfaction with the GRID scale applied to the "dissatisfied–satisfied" item (similar for the two others pairs of opposite adjectives).

Behavioral intentions. To test and compare the predictive validity of the GRID scale versus the SD scale, we considered two conventional behavioral intention variables: loyalty and WOM. We measured the respondent's intentions to be loyal to their bank with seven items adapted from Wagner et al. (2009) and Seiders et al. (2005): "I would consider… my first choice during the coming years," "I intend to use… in the coming years," "Next time I need… I would choose this bank," "I would continue to be a client…," "I expect to use… in the coming years," "I will use… in the coming years," and "I want to use… in the coming years." Items were rated on 7-point Likert scales (from 1 = "very unlikely" to 7 = "very likely"). WOM intentions were measured with four items adapted from Zeithaml, Berry, and Parasuraman (1996): "I will speak positively…," "I will speak negatively… (reversed)," "I will encourage my friends and

relatives…," and "I will recommend…." Items were rated on 7-point Likert scales (from 1 = "strongly disagree" to 7 = "strongly agree").

Table 1. Indicator variable description, score means and standard deviations

Constructs and indicators		SD format		GRID format	
		M	SD	M	SD
Perceived quality					
Environment					
E1	The exterior of this bank is visually appealing	4.21	1.576	4.32	1.392
E2	The interior of this bank is visually attractive	4.43	1.465	4.54	1.350
E3	Employees of this bank have neat appearances	5.43	1.315	5.44	1.099
E4	The interior of this bank is spacious	4.61	1.554	4.58	1.462
Interaction					
I1	Employees of this bank have the knowledge to respond to problems	4.88	1.329	4.88	1.414
I2	Employees of this bank are polite to customers	5.63	1.180	5.49	1.199
I3	Employees of this bank are experienced	5.04	1.197	4.95	1.274
I4	Employees of this bank instill confidence in customers	4.97	1.310	4.89	1.327
I5	Employees of this bank are understanding of customers	5.16	1.281	5.04	1.346
I6	Employees of this bank serve customers in good manner	5.17	1.260	5.07	1.258
I7	There is a warm relationship between employees of this bank and customers	4.95	1.340	5.06	1.313
Empathy					
Em1	This bank does not make its customers stand in a queue	4.73	1.566	4.67	1.450
Em2	Employees of this bank enact transactions on a timely manner	5.03	1.438	5.04	1.301
Em3	Employees of this bank always help customers	4.94	1.442	4.89	1.324
Em4	Employees of this bank provide individualized attention to customers	4.81	1.412	4.85	1.345
Em5	Employees of this bank are willing to solve customer problems	4.94	1.397	4.93	1.294
Reliability					
R1	Employees of this bank provide error-free service	4.51	1.360	4.36	1.503
R2	Employees of this bank carry out customer transactions confidentially	5.53	1.223	5.43	1.169
R3	Employees of this bank provide customers with precise information	5.03	1.269	4.91	1.373
R4	This bank informs customers about its financial operation accurately	5.01	1.320	4.94	1.323
Satisfaction					
S1	Negative - Positive	6.10	1.854	5.298	1.5548
S2	Dissatisfied - Satisfied	6.08	1.741	5.401	1.5979

S3	Unfavorable - Favorable	6.06	1.901	5.503	1.5259
	Loyalty intentions				
L1	I would consider this bank my first choice in the next years	4.85	1.571	4.57	1.568
L2	I intend to use the services of this bank in the next years	5.19	1.351	4.96	1.478
L3	Next time I need a bank service, I would choose this bank	5.09	1.418	4.81	1.534
L4	I would continue to be a client of this bank.	5.38	1.436	5.08	1.699
L5	I expect to use the services of this bank in the next years	5.23	1.361	4.95	1.507
L6	I will use the services of this bank in the next years	5.03	1.440	4.78	1.604
L7	I want to use the services of this bank in the next years	5.04	1.438	4.77	1.643
	WOM intentions				
W1	I will speak positively about this bank	4.43	1.536	4.34	1.523
W2	I will speak negatively about this bank (reversed)	5.08	1.605	4.80	1.613
W3	I will encourage my friends and relatives to do business with this bank	4.16	1.580	3.75	1.616
W4	Recommend this bank to someone who seeks advice	4.48	1.629	4.26	1.676

Note. E1, EM1 and W2 were deleted in measurement model evaluation

Table 1 presents the raw mean scores and standard deviations of the individual items. No significant differences between the datasets can be observed.

Results

Preliminary coding procedure. As the GRID scale had never been used within a system of related constructs, the issue of its coding is raised. Hence, we referred to the literature regarding indices for measuring ambivalence (Breckler, 1994; Priester *et al.*, 1996; Thompson *et al.*, 1995) and properties of overall satisfaction defined as a bidimensional concept. Our ambition was to capture both (a) the distinction between indifference and ambivalence, and (b) the distinction between satisfaction and dissatisfaction simultaneously. To capture these four evaluative reactions, we propose a formula that estimates a score of overall satisfaction S(i,j) with “i” as the given score of satisfaction on the horizontal axis and “j” as the given score of dissatisfaction on the vertical axis. To remain congruent with the bilinear approach, we selected a bilinear model that allows to separately consider the function terms (i.e., satisfaction and dissatisfaction). To make the GRID scale comparable with the 9-point SD scale, we developed a score ranging from 1 to 9. We then defined a set of rules or mathematical constraints to capture the four states of overall satisfaction. The mathematical

development of this overall satisfaction score is illustrated in Appendix 2. Finally, we propose the following bilinear model:

$$S(i,j) = (b + 2)\, i + bj - 1 - 6b, \text{ where } b = -0.5.$$

Figure 6 presents the coding result from S(i,j).

Figure 6. Overall satisfaction coding used in the PLS analysis (an example for Satisfaction-Dissatisfaction item; similar for Positive-Negative and Unfavorable – Favorable items)

S(i,j)

Dissatisfaction dimension (j)					
5	1	2.5	4	5.5	7
4	1.5	3	4.5	6	7.5
3	2	3.5	5	6.5	8
2	2.5	4	5.5	7	8.5
1	3	4.5	6	7.5	9
	1	2	3	4	5

Satisfaction dimension (i)

PLS analysis. The statistical analysis proceeded in two steps. First, the theoretical model presented in Figure 5 was fitted using partial least squares analysis (PLS) to model latent variables. PLS was chosen instead of structural equation modeling (SEM) because it is more appropriate when a multivariate normal distribution cannot be assured and the sample sizes are small (preliminary outlier checks using Mahalanobis distance were performed, which yielded an effective dataset of $n_{SD} = 155$ and $n_{GRID} = 151$). Unlike SEM, PLS shifts the emphasis from theory testing to predictive modeling, where the objective is to maximize predictions in the endogenous construct rather than explain the covariances of all of the indicators used in the model (Chin, 2010, p. 309). PLS uses only approximately half of as many observations to reach a given level of statistical power, and the absolute error of parameters increases less quickly with a decrease in sample size

for PLS than it does for SEM (Reinartz *et al.*, 2009). A Monte Carlo simulation conducted by Chin and Newsted (1999) indicates that PLS can glean meaningful information from sample sizes as low as 20. The fit of PLS models was evaluated using the R-square and a general criterion of goodness-of-fit (GoF) proposed by Tenenhaus, Vinzi, Chatelin and Lauro (2005). The significance and stability of the estimates was computed using a bootstrapping procedure with 2000 runs. The analysis was run using Smart PLS 3.0.

To compare the measurement performance of the two scaling techniques (GRID and SD), we tested the reliability and validity of the satisfaction indicators in each scale format. Such findings would provide evidence of how accurate the measurement items are as well as the convergent validity of the items and the discriminant validity of the construct assessed using the two scaling techniques.

Table 2 presents the reliability coefficients (Fornell *et al.*, 1981). The results indicate high internal consistency among the items assessed with the SD scale: composite reliability (CR) was greater than .70, and average variance extracted (AVE) was greater than .50. More importantly, the results show that the items assessed with the GRID scale exhibit similar high internal consistency, as reflected in the high reliability coefficients CR and AVE (Table 2).

Table 2. Loadings and reliability coefficients (PLS Estimation)

Constructs & Items	SD scale format										GRID scale format									
	E	I	EM	R	S	L	W	AVE	CR	Guttman	E	I	EM	R	S	L	W	AVE	CR	Guttman
Perceived Quality								.63	.97	-								.63	.97	-
Environment (E)								.66	.85	.76								.64	.84	.72
E2	**.83**	.48	.49	.39	.26	.33	.47				**.74**	.33	.42	.32	.01	.20	.23			
E3	**.83**	.67	.63	.56	.34	.42	.36				**.85**	.59	.54	.59	.27	.33	.30			
E4	**.75**	.33	.35	.27	.14	.22	.29				**.80**	.41	.39	.42	.14	.25	.29			
Interaction (I)								.76	.96	.94								.79	.96	.95
I1	.63	**.85**	.72	.67	.49	.58	.55				.48	**.87**	.75	.71	.44	.62	.64			
I2	.56	**.81**	.68	.66	.44	.59	.46				.53	**.81**	.71	.66	.33	.43	.42			
I3	.53	**.85**	.68	.69	.52	.52	.50				.52	**.92**	.78	.79	.43	.60	.66			
I4	.62	**.91**	.78	.73	.60	.62	.62				.56	**.92**	.84	.84	.46	.68	.70			
I5	.48	**.88**	.78	.77	.57	.66	.64				.48	**.92**	.83	.79	.48	.62	.67			
I6	.53	**.89**	.75	.71	.53	.69	.56				.50	**.92**	.82	.79	.51	.62	.63			
I7	.54	**.87**	.75	.62	.59	.65	.62				.51	**.86**	.79	.75	.47	.63	.62			
Empathy (EM)								.84	.95	.93								.81	.94	.92
EM2	.57	.75	**.89**	.74	.56	.60	.61				.52	.74	**.87**	.72	.36	.61	.51			
EM3	.61	.78	**.93**	.74	.60	.67	.67				.53	.80	**.90**	.71	.41	.59	.58			
EM4	.56	.79	**.91**	.72	.57	.68	.70				.45	.80	**.89**	.78	.39	.72	.71			
EM5	.57	.78	**.93**	.72	.57	.73	.66				.56	.86	**.94**	.80	.44	.65	.64			
Reliability (R)								.77	.93	.90								.69	.90	.85
R1	.40	.64	.66	**.83**	.49	.61	.59				.41	.68	.73	**.78**	.44	.68	.71			
R2	.46	.62	.59	**.81**	.45	.53	.42				.55	.55	.54	**.74**	.31	.41	.36			
R3	.54	.78	.78	**.92**	.55	.66	.63				.52	.84	.76	**.92**	.51	.65	.63			
R4	.47	.75	.74	**.93**	.59	.63	.63				.45	.75	.72	**.86**	.45	.62	.64			
Satisfaction (S)								.78	.91	.87								.89	.94	.93
S1	.36	.61	.62	.60	**.95**	.67	.66				.18	.47	.41	.46	**.93**	.50	.47			

S2	.31	.60	.61	.57	**.94**	.70	.67				.18	.46	.41	.52	**.95**	.52	.45				
S3	.15	.39	.39	.38	**.74**	.42	.44				.18	.49	.44	.49	**.95**	.52	.44				
Loyalty intentions (L)								.87	.97	.96								.88	.98	.96	
L1	.44	.67	.73	.69	.66	**.90**	.81				.36	.63	.67	.66	.50	**.90**	.77				
L2	.42	.70	.71	.71	.63	**.93**	.69				.30	.61	.64	.67	.47	**.92**	.76				
L3	.44	.71	.73	.68	.64	**.93**	.72				.35	.65	.68	.68	.52	**.93**	.76				
L4	.30	.58	.58	.56	.64	**.91**	.63				.32	.64	.69	.67	.53	**.93**	.72				
L5	.32	.65	.64	.62	.64	**.94**	.67				.25	.60	.66	.64	.49	**.95**	.76				
L6	.40	.65	.68	.64	.64	**.94**	.79				.32	.67	.70	.69	.54	**.97**	.81				
L7	.41	.67	.67	.62	.66	**.95**	.76				.30	.64	.66	.68	.53	**.96**	.82				
WOM intentions (W)								.86	.95	.92								.83	.93	.89	
W1	.47	.68	.72	.68	.67	.80	**.91**				.30	.66	.61	.66	.46	.69	**.91**				
W3	.39	.51	.58	.52	.56	.59	**.90**				.26	.53	.55	.55	.34	.66	**.89**				
W4	.43	.60	.69	.60	.64	.76	**.95**				.37	.69	.68	.71	.48	.86	**.93**				

The extent to which the items are truly a homogeneous set of indicators of the underlying construct (convergent validity), in both scale formats, was assessed using factor loadings. The factor loading matrices show consistent patterns across the two datasets (Table 3). Three items (i.e., E1: “The exterior of this bank is visually appealing,” Em1: “This bank does not make its customers stand in a queue,” and W2: “I will speak negatively about this bank”) showed relatively small loadings and they were deleted from the analysis, without any influence on the construct validity. The remaining loadings were greater than .70 and significant at a *p*-value of .01 in both scale formats. The loadings underlying the satisfaction construct showed a narrow range and were equally high and significant in the GRID scale as in the SD scale. All in all, the analysis supported the convergent validity of the satisfaction items measured with either SD or GRID scale.

We also examined the extent to which the constructs share the same type of items and thus are not conceptually distinct from each other (discriminant validity). Consistent with Table 2, each item loads more highly on their own construct than on other constructs and all constructs share more variance (squared loadings and cross loadings) with their measures than with other constructs. Further, we compared the correlations among constructs using the square root of AVE. All constructs (including satisfaction assessed

with the GRID and SD scales) share more variance with their items than with other constructs (Table 3). On the basis of this analysis, we concluded that there is no difference in terms of reliability, convergent and discriminant validity of satisfaction assessed with GRID scale versus the traditional SD scale.

Table 3. Descriptive statistics and correlation matrix for the latent constructs

	SD scale format									GRID scale format								
Constructs	M[1]	SD[1]	SE	I	EM	R	S	L	WOM	M[1]	SD[1]	SE	I	EM	R	S	L	WOM
Quality																		
Environment (E)	4.82	1.18	.79[2]							4.85	1.04	.79[2]						
Interaction (I)	5.13	1.08	.64	.87[2]						5.05	1.15	.57	.89[2]					
Empathy (EM)	4.97	1.28	.63	.84	.92[2]					4.92	1.18	.57	.88	.90[2]				
Reliability (R)	5.04	1.10	.53	.80	.79	.87[2]				4.91	1.11	.57	.86	.84	.83[2]			
Satisfaction (S)	6.17	1.53	.33	.61	.62	.60	.88[2]			5.40	1.43	.29	.57	.52	.62	.92[2]		
Loyalty intentions (L)	5.16	1.29	.42	.71	.73	.69	.69	.93[2]		4.84	1.47	.36	.68	.87	.72	.67	.94[2]	
WOM intentions (W)	4.40	1.42	.47	.65	.72	.66	.68	.78	.93[2]	4.12	1.46	.34	.69	.67	.71	.69	.82	.91[2]

[1]Deterministically calculated based on the individual items. All correlations were significant at $p \leq .05$

[2] The numbers in the diagonal denote the square root of AVE

Having established the general reliability [4] and validity of the indicators assessed with the GRID [5] and SD scales, respectively, we focused on testing the theoretical model fit (GoF), nomological validity, and predictive power of the model and compared the results obtained with the two scales. While the fit indices cannot be statistically compared across samples (Wetzels *et al.*, 2009), the model fit using the GRID scale is significantly high (GoF = .703), suggesting that the theoretical model fits the GRID data well (Table 4).

The structural model results are presented in Table 5. The standardized beta estimates show a significant and positive relationship between quality and satisfaction, and between satisfaction and behavioral intentions, in both samples, thus corroborating the theoretical expectations. This was evidence of the nomological validity of the satisfaction construct under both SD and GRID scale formats.

In addition to fitting a model to the data, we tested the predictive accuracy of satisfaction assessed using the GRID and SD scales, respectively. The results show that, for the SD scale sample, satisfaction predicts approximately 48% of the variance in

loyalty intentions and 46% of the variance in WOM intentions. For the GRID scale sample, satisfaction predicts 46% of the variance in loyalty intentions and 47% of the variance in WOM intentions. As table 4 indicates, it suggests consistent results for the two scale formats.

For further support, we proceeded with an alternative blindfolding procedure (Chin, 2010) to estimate how well the observed values of the dependent variables are predicted by the satisfaction evaluation assessed with the GRID versus SD scales. Essentially, the blindfolding procedure omits part of the data by using an omission distance D and removing every other Dth data point as we move across the data matrix. With the remaining data, estimates are obtained and compared with the actual data based on the sum of squares of the prediction error. This procedure is repeated several times, each time with a new round of omissions. On the basis of this analysis, two different measures of dependent variable prediction accuracy were estimated: cross-validated communality (CVC), where the prediction of the data points is made using the underlying latent variable score, and cross-validated redundancy (CVR) where prediction is made using those latent variables that predict the lock in question (for more details see Chin, 2010). Table 4 shows the results of this test: in the SD format, CVC = .379 (loyalty intention) and CVR = .394 (WOM); in the GRID format, CVC = .378 (loyalty intention) and CVR = .383 (WOM).

Table 4. Communalities, R^2 values, CVR, CVC and Goodness of Fit (GoF)

	SD scale format				GRID scale format			
Constructs	Communalities	R^2	CVR	CVC	Communalities	R^2	CVR	CVC
Quality	.629	.000	.588	.588	.628	.000	.585	.585
Environment (E)	.656	.523	.317	.317	.637	.453	.271	.276
Interaction (I)	.760	.921	.694	.683	.791	.944	.740	.716
Empathy (EM)	.846	.872	.735	.721	.809	.891	.723	.658
Reliability (R)	.773	.800	.618	.613	.688	.854	.580	.476
Satisfaction	.785	.411	.311	.564	.843	.343	.281	.643
Loyalty intentions	.871	.485	.379	.824	.877	.461	.378	.830
WOM intentions	.863	.463	.394	.679	.828	.475	.383	.614
Average	.793	.639			.782	.631		
GoF index	.712				.703			

Note. GoF index= goodness of fit index; $GoF = \sqrt{Mean(communality) \times Mean(R^2)}$, where $GoF_{small} > .1$, $GoF_{medium} > .25$, and $GoF_{large} > .36$ are baseline values for validating the PLS model globally (Tenenhaus and Vinzi 2005). CVR = Cross Validated Redundancy; CVC = Cross Validated Communality. CVR > 0 and CVC > 0 implies that the model has predictive relevance (Chin 2010).

These results add to our previous analyses and support the conclusion that the use of the GRID scale, instead of the SD scale, for assessing satisfaction does not change the predictive accuracy of the construct. Nevertheless, it could be argued that the proposed coding of the GRID scale, although justified by a bilinear function, is not the only possible one. This choice may influence the results, including the predictive accuracy of the model. To strengthen our conclusions, we adopted an alternative analytical perspective by questioning the nature of the data obtained with the GRID scale: should it be treated as interval or categorical? To answer this question, we searched for additional evidence about the predictive validity of satisfaction as assessed by the GRID scale by avoiding the coding procedure and treating the scale points as categories (i.e., not as continuous variables).

Table 5. Standardized beta coefficients and t-values (in parentheses) for the structural models

	SD scale format				GRID scale format			
From-to	Quality	Satisfaction	Loyalty intentions	WOM intentions	Quality	Satisfaction	Loyalty intentions	WOM intentions
Quality	-	.641*** (11.23)	-	-	-	.585 *** (9.63)	-	-
Satisfaction	-	-	.697 *** (14.80)	.680 *** (12.77)	-	-	.679 *** (14.62)	.689 *** (14.61)

Note: Quality is a higher order factor construct with four dimensions: Environment quality, Interaction quality, Empathy and Reliability

Bayesian approach. In this analysis, a Bayesian network statistical approach (hereafter BNs; Neapolitan, 2004; Pearl, 1988) was used to test the performance of satisfaction as assessed by the two scales. BNs offer several advantages. First, using BNs we can estimate the relationships between latent constructs measured on a nominal or ordinal scale. Essentially, the technique allows for the representation of the joint probability distributions between multiple categorical variables. Each variable is associated with a probability function that takes a particular set of values for the predictor variables as its input and gives the probability distribution of the variable. Second, in addition to linear relationships, BNs can also consider nonlinear relationships between the variables (Neapolitan, 2004). We implemented this analysis in NETICA 5.09, which is specialized software for Bayesian analysis that can handle latent categorical variables.

In line with the original scales, satisfaction items assessed using the GRID scale had 25 response categories and satisfaction items assessed using the SD scale had 9 response categories. The conditional probabilities functions were derived from the empirical cases according to the structural model using an expectation–maximization (EM) algorithm. As with SEM-PLS, BNs use the associations among the categorical items to determine relationships between the latent variables of the network. Using the probability distributions derived from the empirical data, we simulated 1000 cases whose probability distribution matched that of the original model. Simulated cases were necessary to derive an estimation of the distribution of the latent (i.e., hidden) variables and further provide a picture of the relative accuracy of the network for the two scale

formats. The misclassification rates, based on simulated data, indicate the level of prediction that is possible from our model when it accurately represents the conditional relationships between the variables.

In Table 6, we present the estimated predictive accuracy of satisfaction for the simulated data using the SD and GRID scales. The two predicted variables are loyalty intentions and WOM intentions, each with seven levels ranking from the lowest (no intention to continue) to the highest (a high intention to continue with their bank). The error rate indicates the percentage of cases for which the model-predicted value of intentions (i.e., the category with the highest estimated probability) was different from the actual value of the variable. Table 6 shows that the two scale formats provide comparable results in terms of error rates. As expected, the model error rate is significantly better than the chance prediction for both scale formats (for a dependent variable with 7 levels, the error rate associated with chance prediction is 85%). Other measures of the accuracy of the predictions (logarithmic loss and quadratic loss) consider the entire predicted probability distribution over the levels of the dependent variables, rather than just the level with the highest probability. The logarithmic loss has values between .030 and .092 (i.e., close to 0–optimal) and quadratic loss values ranging between .016 and .038 (again close to 0–optimal).

Table 6. Comparison of model prediction accuracy with 1000 simulated cases (Expectation Maximization (EM) Estimation in Netica 5.9)

	SD scale format		GRID scale format	
	Loyalty intentions	WOM intentions	Loyalty intentions	WOM intentions
Classification error (%)	2.4	2.0	1.1	2.4
Logarithmic Loss	.057	.054	.030	.092
Quadratic Loss	.032	.031	.016	.038

Note. Classification error: range 0 – 100%. Logarithmic loss: range 0 - infinity, with 0 optimal. Quadratic loss; range 0 - 2, with 0 optimal.

To conclude, the analysis performed by treating the scales as categorical supports our previous findings and shows a similar picture for the two scale formats.

Discussion

This study examined the relevance of a new tool, the Evaluative Space Grid (Larsen *et al.*, 2009), to measure overall service satisfaction. The results of an online survey evaluating banking services indicate that the GRID scale offers an interesting alternative measure of satisfaction to the traditional SD scale. In particular, within the well-established relationship between quality, satisfaction, and behavioral intentions (Cronin *et al.*, 2000; Olsen, 2002), we found that the assessment of overall satisfaction using the GRID scale offered comparable performance to the SD scale on the basis of criteria such as reliability, as well as convergent, discriminant, nomological, and predictive validity.

Methodological and Theoretical Implications of the Research

In this article, we provide a methodological contribution to the literature on marketing by testing and validating a measurement tool developed in psychological research. The GRID scale is not well known to academia and this study aims to contribute to the literature by making the scale more visible and accessible and by envisioning new grounds regarding its implementation in practice. Our work is more than just a matter of porting a tool for use from one discipline to another. It explores how this measurement instrument can be used in customer satisfaction surveys. Thus, we respond to calls for research by Olsen (1999) and Nowlis, Kahn, and Dhar (2002) to distinguish between ambivalent and indifferent customers and contribute to the assessment of overall evaluative responses by making it possible to extract instances of pure satisfaction/dissatisfaction from mixed reactions.

In doing so, we extend and improve the classical unidimensional approach to satisfaction, which assumes a single bipolar continuum, by providing a more appropriate two-dimensionnal tool to support the bidimensional approach to satisfaction. From this perspective, satisfaction and dissatisfaction are conceived as two distinct concepts. Indeed, although literature on both psychology and management recognizes the need to tackle the positive and negative reactions separately, this has not yet been linked to the concept of consumer ambivalence. By combining these two areas of work, we highlighted four types of overall customer evaluative reactions: satisfaction (high

positivity, low negativity), dissatisfaction (high negativity, low positivity), indifference (low positivity and low negativity), and ambivalence (high positivity and high negativity). Adopting our understanding and measurement of customer satisfaction based on the GRID scale offers a new means by which theorists and practitioners can define and assess customer evaluations in general.

Marketing Implications

Although our data suggest that both scales offered comparable performances in terms of various psychometric indicators; nevertheless, the question arises regarding in which circumstances should one of the measurement tools be preferred? It actually appears that the GRID scale address different survey needs than the SD scale. The GRID scale is interesting for practitioners who desire to identify and separate ambivalent and indifferent customers. As such, it can benefit businesses for who a significant proportion of their customers fall in the midpoint rating on the traditional SD scales (e.g., internet service providers and mobile phone operators). As highlighted in Table 7, in our study, most evaluations were concentrated in the three central points in the SD scale format (49.4%) and in the diagonal of the GRID scale format (66%). In this situation, we propose, with the GRID scale, an alternative approach to the still-widely used Net Promoter Score (Reichheld, 2003), consisting of subtracting the percentage of "detractors" (dissatisfied respondents) from the percentage of "promoters" (satisfied respondents). Ignoring the remaining respondents, qualified as "passive" by Reichheld (2003), would lead to extract valuable information. Indeed, congruent with previous findings (Johnston, 1995), our data show that the 41.7% of ambivalent customers exhibit significantly more WOM intentions then the 24.3% indifferent ones (table 8). This is probably explained by the motivation to reduced internal conflict associated with mixed reactions (Sengupta *et al.*, 2002). In such a situation, and contrary to a traditional approach that would simply advise improving satisfaction levels, a GRID scale user would be prompted to focus on the elements of dissatisfaction (Turner *et al.*, 2006) and, thus, reduce ambivalence caused by internal conflict. Based on Tuten and August's work (1998), this ambivalence may result from a failure on hygiene factors, meaning that managers should pay specific attention to the basic expected elements of the service.

Facing indifferent customers is more challenging because it is difficult to arouse the interest of someone who has no opinion (Olsen, 1999). Consequently, researchers and practitioners are advised either to exclude the indifferent responses if their proportion is insignificant or to devise new offers to arouse the interest of the indifferent respondents. Indeed, as Tuten and August (1998) noted, this indifference is probably related to a failure in motivation factors, meaning that managers should work on all the elements beyond the expected basic service.

Thanks to the distinction between ambivalence and indifference, marketers would be able to focus on truly unsatisfied customers. The GRID scale could be used to expand their strategies not only to create loyalty based on satisfaction but also thanks to a reflection about how to decrease the level of dissatisfaction (Turner *et al.*, 2006). The unsatisfied customer is the least desirable segment and businesses should seek to identify dissatisfying factors while offering satisfying factors in an attempt to at least move customers into the "ambivalent" category.

Moreover, based on the new typology of customer evaluative reactions we proposed, it appears that the GRID scale is a very interesting tool for improving data visualization. Indeed, the GRID scale immediately and spatially differentiates among satisfaction, dissatisfaction, ambivalence, and indifference. This raises the issue of delimitation for each evaluative category. The repartition we used for the analysis presented in Table 7 and 8 is described in Appendix 4. However, we argue that this issue must be discussed within each business. As practitioners know the expected ratio of satisfied and dissatisfied customers in their business, we suggest that the GRID scale could be used as a visual benchmark to refine managerial objectives.

In sum, marketers' uptake of the GRID scale remains open. Regardless of the GRID scale usage by practitioners, we advocate them to drop the binary analysis of satisfied versus dissatisfied customers and to reconsider the valuable information gathered from the analysis of "middle-ground" customers.

Table 7. Percentage of respondents associated with each evaluative reaction derived from data for the second item of the overall satisfaction measurement (from "dissatisfied" to "satisfied")

Percentage of respondents associated with each evaluation type					
SD scale format		GRID scale format			
Satisfied (%)	43.7	Satisfied (%)	25.5	34	Polarized evaluations
Dissatisfied (%)	6.9	Dissatisfied (%)	8.5		
Central points (%)	49.4	Ambivalent (%)	41.7	66	"Passive" respondents in Reichheld terms
		Indifferent (%)	24.3		

Note. Appendix 2 describes which cell of the SD scale and the GRID scale accounts for each category of evaluation

Table 8. WOM intentions means for each evaluative reaction

Indicators	S1 Negative - Positive		S2 Dissatisfied - Satisfied		S1 Unfavorable - Favorable	
	Frequencies	WOM intentions	Frequencies	WOM intentions	Frequencies	WOM intentions
Dissatisfied	9.8	2,33[a]	8.5	1.87[b]	7,8	1.61[a]
Indifferent	17.0	3.56[b]	24.2	3.81[a]	20,3	3,69[b]
Ambivalent	49.0	4.17[c]	41.8	4.19[a]	45,8	4.19[c]
Satisfied	24.2	5.17[d]	25.5	5.09[c]	26,1	5,13[d]
Total/Mean	100	4.13	100	4,13	100	4,13

Note. Means followed by different letters are statically different at $p<.01$

Limitations and Directions for Further Research

As we explain in the result part, we developed our own coding of the GRID scale in PLS analysis. We relied on the literature regarding satisfaction, ambivalence, and indifference to define constraints to develop a formula for scoring overall satisfaction from the GRID scale. However, a different method of coding might lead to different results. Therefore, we encourage the exploration of others indexes, especially from the perspective of using the GRID scale to isolate indifferent from ambivalent answers in situations where midpoint evaluations occur frequently. In the BN analysis, we found strong support for the predictive accuracy of the GRID scale while surmounting the limitations of GRID coding. However, this analysis was based on simulated data, and therefore, future studies should collect data to validate our results. Furthermore, future studies with bigger data sets may distinguish between ambivalent and indifferent

individuals and perform analyses only with respect to these two segments or on the whole sample omitting these two segments.

Furthermore, in this study, we chose to directly measure evaluative reactions rather than manipulate reactions using experimental stimuli. This leaves open the replication of the results using other methodological approaches and measuring others strategic constructs. For example, several researches highlighted the bidimensional structure of loyalty (Dick *et al.*, 1994; Oliver, 1997; Pritchard *et al.*, 1992; Yi *et al.*, 2003). On the GRID scale, the combination of behavioral and attitudinal dimensions can be used to capture the different levels of loyalty identified in this study.

Notes

[1] The Likert scale is another popular scale for measuring consumer satisfaction. However, many researchers prefer to use the SD scale due to the Likert scale's inability to quantify anything rather than a degree of agreement with a statement (Menezes *et al.*, 1979). Moreover, some researchers consider that the Likert scale may introduce an acquiescence bias (Friborg *et al.*, 2006; Menezes *et al.*, 1979). Indeed, many satisfaction studies use a SD scale for measuring satisfaction (Bolton *et al.*, 1999; Mittal *et al.*, 1998; Olsen, 2003; Soster *et al.*, 2014).

[2] This overall assessment could be focused on a general evaluation of the cumulative experience regarding the service or dedicated to a transaction-specific evaluation.

[3] These pairs of opposite adjectives assessing satisfaction have been measured either using a Likert scales or a SD scales.

[4] At least two trials are necessary to estimate the reliability coefficient for each construct. Due to the difficulty of obtaining two or more samples under the same conditions and from the same respondents, the test–retest reliability was not performed in this study. However, we refer to Guttman (1945) and calculated the lower bounds to the reliability coefficient (Lambdas 1−6), which can be computed from a single trial. The probability is unity that the reliability coefficient is not smaller than the largest of lambdas 1−6 (reported in Table 2). It is assumed only that the items are experimentally independent, the population is indefinitely large, and the

universe of trials is indefinitely large. The formula is for relatively large samples, thus caution should be exercised regarding their interpretation in small samples.

[5] See also Appendix 3.

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