

# Consumers' Waiting in Queues: The Role of First-Order and Second-Order Justice

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## ABSTRACT

**Past research on queuing has identified social justice as an important determinant of consumers' waiting experiences. In queuing settings, people's perception of social justice is affected by whether the principle of first in and first out (FIFO) has been violated. However, even when service follows the FIFO principle, waiting time may still differ from one consumer to another for various reasons. For instance, a consumer who happens to arrive in the queue after a large group of people may have to wait longer than average. In this research, it is argued that, aside from and independent of the FIFO principle, consumers also care about whether everyone spends an approximately equal amount of time waiting before availing of the product or service. When consumers perceive that they have spent more time waiting than others and when they can attribute this injustice to the service provider, they will be less satisfied with the waiting experience. It is also proposed that adherence to the FIFO principle is a more salient concern to consumers (thus termed "first-order" justice), and equal waiting time ("second-order" justice) matters only when first-order justice is not an issue. Three studies support the predictions. © 2008 Wiley Periodicals, Inc.**

## INTRODUCTION

Waiting has become an integral part of consumers' experience as they try to avail of different products and services. Because consumers' waiting experiences tend to affect their overall evaluation of the service encounter (Taylor, 1994; Tom & Lucey, 1997), studying such experiences is of utmost importance to marketing managers.

Past research shows that waiting for products and services is typically a negative experience, and people's retrospective evaluation of the service encounter is negatively related to the perceived duration of the wait (Katz, Larson, & Larson, 1991; Taylor, 1994). Apart from the length of the wait, consumers' waiting experiences are also affected by the context and situation in which the waiting occurs. For example, a wait filled with activities is more palatable than an empty wait, and filling time can reduce consumer dissatisfaction with waiting (Katz, Larson, & Larson, 1991). Playing slow-tempo (vs. fast-tempo) music at the background lowers perceived waiting time and leads to greater satisfaction (Oakes, 2003). Finally, providing consumers with waiting duration information (information about the expected length of a wait) also has a positive effect on service evaluation (Hui & Tse, 1996; Larson, 1987).

## QUEUE AS A SOCIAL SYSTEM

A growing body of research suggests that queues constitute a social system with norms, roles, and obligations (e.g., Schmitt, Dube, & Leclerc, 1992). In other words, queuers' waiting experiences are often influenced by social factors that transcend individual cost considerations. For example, Zhou and Soman (2003) found that queuers tend to make social comparisons with others who are also waiting, and such comparisons affect their affective states and their decisions to leave the queue. In particular, it was found that queuers are likely to make downward comparisons with those less fortunate others behind them. As a result, upon seeing a large number of people behind, queuers tend to be in a more positive affective state and are more likely to stay in the queue. In fact, if based solely on cost and benefit analysis, the number of people behind normally<sup>1</sup> should not affect the expected cost/benefit of additional waiting, therefore should not affect queuers' decision to stay in or leave the queue.

Queues are social in nature. Most queues involve placing different people who are trying to achieve the same goal (availing of the service or goods) in physical proximity to one another. In a social system that

<sup>1</sup> Of course, as Zhou and Soman (2003) pointed out, a larger number of people behind implies a longer queue, which may lead to two inferences: (1) It may serve as a social validation cue that the service is worth waiting for, and 2) it may lead the consumer to expect a longer queue if she or he rejoins later. The authors have ruled out these two alternative explanations and shown that social comparison underlies the number behind effect independent of such inferences.

concerns allocating relatively limited resources to a group of people, people are expected to act in reference to a set of commonly shared social rules and values. Violations of such rules and values would inevitably highlight issues of fairness and social justice (Lerner & Lerner, 1981). For example, in a common queue, it is generally agreed upon that everyone should be treated equally and be served on a first-come, first-serve basis (Larson, 1987). Therefore, illegitimate intrusion to waiting lines represents violation of such shared rules and triggers negative responses from other queuers who are motivated to take actions to defend the queue as a social system (Milgram et al., 1986; Schmitt, Dube, & Leclerc, 1992).

## **FIRST-ORDER AND SECOND-ORDER JUSTICE**

In previous research, social justice in queues has been traditionally defined as and measured by the adherence to the principle of first in, first out (FIFO; Larson, 1987). Violation of the FIFO principle can obviously occur because of intrusions into the queue, as mentioned above. It can also occur due to reasons related to the design of the queue system. For example, compared to a single-line system with guaranteed first-come, first-served queue discipline, a multiline system often engenders situations of social injustice; that is, latecomers may get served earlier because they joined a faster queue. In addition, sometimes efforts made by the service providers to speed up the service (e.g., opening up new service counters) may lead to social injustice (e.g., when the latecomers rush to the front of the new counters and become the first to get served). While queue intrusions often elicit negative responses toward the intruder (Schmitt, Dube, & Leclerc, 1992), social injustice that can be attributed to service providers (e.g., opening up new service counters) tends to result in negative reactions toward the service provider and lower customer satisfaction (Larson, 1987).

In this article, the FIFO principle is referred to as first-order justice. It is also argued that, as another dimension of social justice, people expect that everyone in the queue should spend an approximately equal amount of time waiting, and this concern is referred to as second-order justice. Even if everyone is served on a FIFO basis, many factors may contribute to a difference in waiting duration across queuers. For example, the arrival rate may change over time either systematically (e.g., there are high-traffic vs. low-traffic hours in a day) or due to random fluctuations. Imagine a scenario where a woman happens to enter the queue after a big group of people; she then may have to wait for a longer period of time than average. Alternatively, fluctuations in departure rate may also lead to differences in waiting time. For instance, imagine that a woman has been waiting for a restaurant table for half an hour and the line is not moving. Suddenly some customers finish eating and several tables are cleared. As a result, she and many others behind her in the line get seated at the

same time. Her waiting time would be much longer than that of those behind her. Different waiting durations may also be caused by the service providers themselves. For example, upon seeing a long line, a restaurant may decide to open a new seating area not used before. As a result, people who have waited longer (those ahead in the queue) may get served at the same time as those who just arrived. Note that in none of the above scenarios was the FIFO principle being violated. Everyone gets seated according to the order of arrival. However, it is reasonable to imagine that people who have waited longer may still feel that it is not fair and thus respond more negatively to the waiting situation. To the best knowledge of the authors, the current research is the first to propose this additional dimension of social injustice in queue disciplines.

In summary, it is hypothesized that people who perceive themselves to have waited longer than other queuers may think that it is socially unfair and have a relatively more negative waiting experience. In Study 1, this hypothesis is tested in a situation when relative (comparative) waiting time should not matter. In particular, presumably, for a person waiting in line, the waiting duration of others behind her should have no effect on how long she has to wait, therefore should not affect her waiting experience. However, research by Zhou and Soman (2003) suggests that people waiting in the queue tend to make social comparisons with others around them, even with those behind them. Therefore, it is expected that when people become aware that those behind waited a shorter period than they themselves did, they may feel a sense of injustice and respond more negatively. The following hypothesis is tested in Study 1:

**H1:** When consumers realize that they have waited longer than those behind them, they will feel less satisfied with the waiting experience.

Between the two areas of social justice in a waiting situation, it is expected that adherence to the FIFO principle would be a more salient concern for the queuers (thus termed “first-order” in this research). This is because in queue settings, a reversal in the order of service is a more obvious and definite cue of social injustice than differences in total waiting time. When someone arriving after you gets served earlier, not only are such situations relatively easy to identify, but also they are unambiguous cases of social injustice. In comparison queuers find it harder to keep track of relative waiting time. To monitor second-order justice, they would have to know both their own waiting time and that of others, and then assess the difference.<sup>2</sup> Therefore, it is further hypothesized that second-order justice will become

<sup>2</sup> In some situations, it may be impossible to know the waiting duration of others. For example, a latecomer would not know the arrival time of people ahead in the queue. Similarly, after being served, queuers may not know when those behind are served. However, in this article, the focus is on situations where one can potentially assess the waiting time of others.

an important issue to the queuers only when first-order justice is not in question. In other words, only when the FIFO principle is not being violated will people attend to issues of relative waiting duration. The relationship between the two forms of justice is similar to that between “qualifying attributes” and “vantage attributes” in satisfaction research. According to the two-factor theory (Hui et al., 2004; Maddox, 1981), service attributes can be categorized into either qualifying or vantage factors of satisfaction. It has been argued that satisfaction is based on a hierarchy of attributes where the service must meet expectations for qualifying attributes first and vantage attributes second (Swan, 1976). For instance, Johnston (1995) has found that, when evaluating a service provider’s performance, people in general view “responsiveness” as a qualifying factor and “friendliness” as a vantage factor. That is to say, when the performance of the qualifying factor does not meet the standard, consumers will feel dissatisfied regardless of the performance of the vantage factor. Only when performance of the qualifying factor has met the standards will the performance of vantage factor start to make a difference. Here, first-order justice resembles a qualifying factor, whereas second-order justice resembles a vantage factor (though in this case ensuring second-order justice does not really serve as an advantage). Consequently, the following prediction is put forward:

**H2:** Second-order injustice (i.e., difference in waiting duration) will only matter when first-order injustice is not an issue. If the FIFO principle has been violated, difference in waiting duration will have little influence on consumers’ satisfaction.

It has been well documented that people make causal attributions about the events that happen in their lives (Ross & Fletcher, 1985). In a service setting, the attribution that consumers make about a service failure/delay affects their responses to it (Bettman, 1979; Folks, 1984; Rose, Meuter, & Curran, 2005; Taylor, 1994). Weiner (1980) identified three dimensions of causal inferences: stability, locus, and controllability. Stability refers to whether the causes are fairly stable or only temporary. For example, a customer may feel unwell after eating at a restaurant because the restaurant’s refrigerator broke down on that day (temporary) or because the restaurant normally buys materials approaching expiration date in order to save money (stable). Locus refers to whether the customer or service provider is responsible for the service failure/delay. A customer may feel unwell after eating at a restaurant because she carelessly tasted food that she is allergic to (cause lies with the customer) or because the food was not fresh (cause lies with the service provider). Finally, controllability refers to the extent to which the cause was volitional (due to choice). If the food at the restaurant was indeed not fresh, it could have been because there was an unexpected power shutdown in the area and the refrigerator lost power for several

hours (uncontrollable cause) or because the restaurant failed to properly monitor its refrigerator's temperature (controllable cause). All of the above three dimensions of causal attributions have been shown to lead to different responses to a service failure. In particular, customers are more likely to feel angry and dissatisfied when they perceive that the service failure can be attributed to causes related to the service provider (locus) and that the service provider had a choice (controllability; Folks, 1984). Similarly, second-order injustice could be attributed to causes differing in locus and controllability. It is therefore predicted that second-order injustice will have a greater impact on satisfaction when consumers attribute it to the service provider. Formally, the following hypothesis is proposed and tested in Study 3:

**H3:** Second-order injustice (i.e., difference in waiting duration) will have greater impact on satisfaction when such injustice can be attributed to factors under the control of the service provider (vs. when it is attributed to factors unrelated to the service provider).

## STUDY 1

### Subjects, Design, and Procedure

Participants were 60 college students at a university in Hong Kong who participated in exchange for course credit. They were randomly assigned to one of two experimental conditions and completed a questionnaire.

In the questionnaire, all participants were asked to imagine that they just graduated from college and were trying to start a small business. Therefore, they had to apply for a business license at the local business registration office. They were told that it was important to get the license soon because a delay in getting the license also meant a delay in opening the business, and thus lost revenues. They submitted the necessary documents and received the license four weeks later. They were told that the applications were processed in order of arrival, therefore first-order justice was implied (always first-in, first-out). They were additionally told that, some time later, a friend also applied for a business license at the same office. Within this basic framework, the level of second-order justice was manipulated by varying the time it took the friend to get the license. In one condition, participants were told that it also took the friend four weeks to get the license (second-order justice = high). In another condition, they were told that it only took their friend one week to get the license (second-order justice = low).

Participants were then asked to indicate how well each of six statements described how they felt at this stage (scale end points: 1 = strongly agree, 9 = strongly disagree). These statements were selected based on pretests and a review of prior research (Cohen & Areni, 1991): "I feel

annoyed [calm, happy, angry, annoyed, relieved, or frustrated].” They then were asked to rate their satisfaction with the service on a 1 to 9 scale (1 = not at all satisfied, 9 = very satisfied). In addition, participants answered two questions. First, they were asked whether they perceived the way applications were handled was fair (1 = very unfair, 9 = very fair). Second, they indicated their intention to complain about the service at this office (1 = very unlikely, 9 = very likely).

## Results

Results from preliminary analyses suggested that the correlation between the three positive valence affective measures (calm, happy, relieved) was high ( $\alpha = 0.84$ ); hence, their mean was used as a measure of positive affect. Similarly, the mean of the three negative valence affective measures (annoyed, angry, frustrated;  $\alpha = 0.91$ ) was used as a measure of negative affect.

Two ANOVAs with positive affect and negative affect as dependent variables and second-order justice (high vs. low) as an independent variable revealed a significant main effect of second-order justice (positive affect:  $F(1, 57) = 31.96, p < .001$ ; negative affect:  $F(1, 57) = 38.11, p < .001$ ). These effects are consistent with Hypothesis 1. Under low level of second-order justice, participants felt less positively ( $M = 3.4$ ) than under high level of second-order justice ( $M = 5.66$ ). Low level of second-order justice also led participants to feel more negatively ( $M = 6.38$ ) than high level of second-order justice ( $M = 3.46$ ).

An identical pattern of results was obtained across all other dependent measures. ANOVA analyses yielded significant main effects of second-order justice (satisfaction:  $F(1, 58) = 13.5, p < .001$ ; perceived fairness:  $F(1, 58) = 77.48, p < .001$ ; likelihood of complaining:  $F(1, 58) = 14.11, p < .001$ ). When the level of second-order justice was low (vs. high), participants were less satisfied ( $M = 2.73$  vs. 4.40), perceived the procedure to be less fair ( $M = 3.33$  vs. 7.13), and were more likely to complain ( $M = 6.27$  vs. 4.43).<sup>3</sup>

## Discussion

The results of this study suggest that people expect everybody to wait an approximately equal amount of time in the queue. Violation of such assumptions that is to their disadvantage trigger negative affect and lower satisfaction with the service. Note that in this study, all participants were told that their friend applied after they did and that the applications were processed in the order of arrival. That is, all participants were

<sup>3</sup> One might question whether the results obtained in this study as well as in Studies 2 and 3 are subject to demand effects. That is, participants might have guessed the purpose of the studies. Note that at the end of all studies, participants were asked to write down what they think the purpose of the study is. Few participants guessed correctly. Excluding those participants from the data analyses does not change the pattern of the results.

aware that the friend's application would not influence how fast their own applications were processed. However, their waiting experience and satisfaction were still heavily affected by how long the friend waited. The results of this study are consistent with previous research that suggests that consumers' affective reactions and decision making can be greatly influenced by others waiting behind even though their waiting time in the queue should not depend on those behind (Zhou & Soman, 2003; see also Schmitt, Dube, & Leclerc, 1992).

One alternative explanation of this study is that participants may not know what the standard waiting period is for applying for a license. Therefore, they may have used the time it took their friend to get the license as a reference point. In other words, when their friend got the license in one week, they may have regarded one week as the normal waiting period for applying a license. In contrast, their 4-week waiting period might seem especially unacceptable. To control for such alternative explanations, in Study 2, the same information about the standard waiting period was provided to all participants and thus their expectations were set constant across conditions.

Note that in Study 1, participants were told that applications would be processed in the order of arrival. Therefore, first-order justice (FIFO) was guaranteed and an effect of second-order justice was found. Based on the two-factor theory (Hui et al., 2004), Study 2 tests the prediction that the FIFO principle (a qualifying factor) is the more salient dimension in people's perception of fairness, and second-order justice (vantage factor) matters only when people are sure that the FIFO principle is being adhered to. In other words, a two-way interaction is expected between first-order and second-order justice on service evaluation.

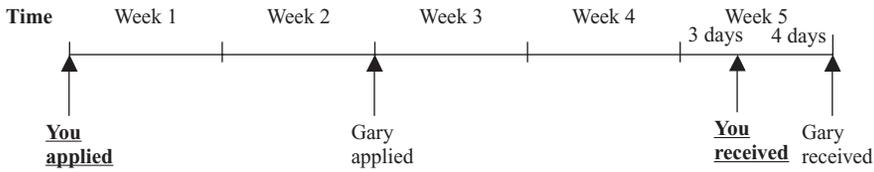
## STUDY 2

### Subjects, Design, and Procedure

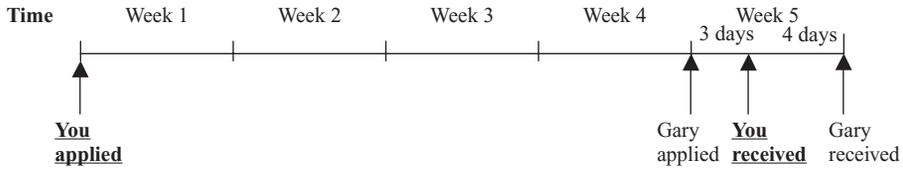
Participants were 80 students at a midwestern university in the United States who participated in exchange for course credit. As in Study 1, they were asked to imagine that they wanted to start a small business and went to the local business registration office to apply for a license. They were told that it was important to get the license as soon as possible so they could use the earned revenues to repay the loan they had borrowed to start the business. They submitted the necessary documents and 31 days later they were informed to pick up the license. To control for the alternative explanation of different reference points, all participants were told that the application process could take from 5 days to 40 days. In addition, participants were told that their college classmate Gary also applied for a business license.

Within this basic framework, first-order justice and second-order justice were manipulated across conditions, yielding a  $2 \times 2$  between-subjects

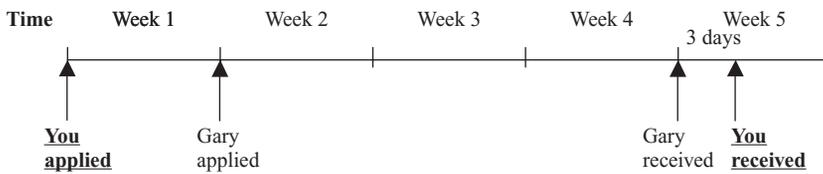
Condition 1: First-Order Justice = Yes, Second-Order Justice = Poor



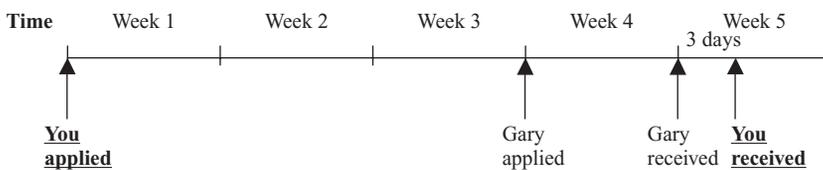
Condition 2: First-Order Justice = Yes, Second-Order Justice = Extremely Poor



Condition 3: First-Order Justice = No, Second-Order Justice = Poor



Condition 4: First-Order Justice = No, Second-Order Justice = Extremely Poor



**Figure 1.** Timing of events as manipulation of first- and second-order justice (Study 2).

factorial design. First-order justice and second-order justice were manipulated by varying the time at which Gary applied for as well as the time at which he picked up his license (the time it took the participant to receive the license is constant across conditions: 31 days). A chart representing the sequence of events (Figure 1) accompanied the instructions and was presented to the participants.

Across all conditions, participants were told that Gary applied for a license *after* they did. However, first-order justice was manipulated by varying the date on which Gary received his license. In conditions where first-order justice was observed, participants were told that Gary received his license four

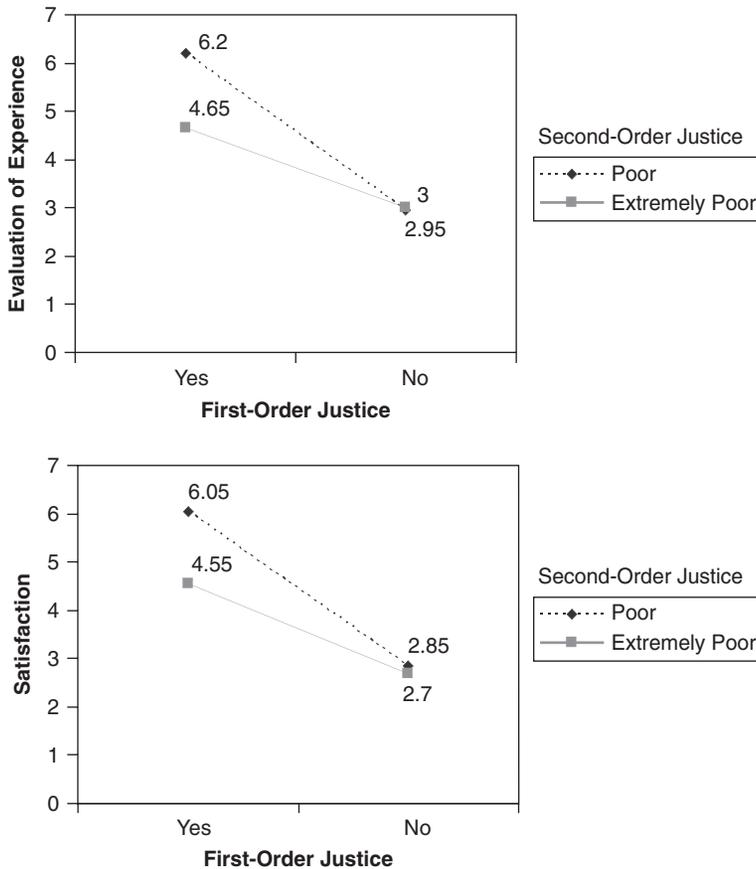
days *after* they did, whereas in conditions where first-order justice was violated, Gary received his license three days *before* they did. Second-order justice was manipulated by varying the date on which Gary submitted his application. Across all conditions, participants were told that their own application took 31 days and Gary's application took a shorter period than theirs (second-order justice was violated). However, the magnitude of this difference in waiting time (i.e., the extent to which second-order justice was violated) was manipulated. In half of the conditions, it took Gary only one week to get his application back (the difference in waiting time is 24 days). In the other conditions, it took Gary three weeks to get his application back (the difference in waiting time is 10 days; see Figure 1).

First, participants were asked to evaluate their experience in this application process on a 1–9 scale (1 = very bad, 9 = very good). Second, they were asked to indicate how satisfied they were about the service at the business registration office on a 1–9 scale (1 = very dissatisfied, 9 = very satisfied).

## Results

Participants' evaluations of their experience were submitted to a  $2 \times 2$  ANOVA with first-order justice and second-order justice as factors. Results revealed a main effect of first-order justice ( $F(1, 76) = 54.08, p < .001$ ) as well as a main effect of second-order justice ( $F(1, 76) = 5.07, p < .05$ ). Not surprisingly, participants rated their experience to be more positive when first-order justice was observed ( $M = 5.43$ ) than when it was violated ( $M = 2.98$ ). In addition, they rated their experience to be more positive (or less negative) when second-order justice was violated to a smaller degree ( $M = 4.58$ ) than when it was violated to a greater degree ( $M = 3.83$ ). More importantly, there was an interaction between first-order justice and second-order justice ( $F(1, 76) = 5.77, p < .05$ ; see Figure 2). Specifically, when first-order justice was observed, second-order justice had a significant impact on how participants evaluated their experience ( $M = 4.65$  vs.  $6.2$ ;  $F(1, 76) = 10.82, p < .01$ ). In contrast, when first-order justice was violated, second-order justice had no effect ( $M = 3$  vs.  $2.95$ ;  $F < 1$ ).

Analysis of participants' satisfaction about the service revealed similar results. First, there was a significant main effect of first-order justice ( $F(1, 76) = 83.09, p < .001$ ) as well as a significant main effect of second-order justice ( $F(1, 76) = 8.87, p < .01$ ). Not surprisingly, participants were more satisfied about the service when first-order justice was observed ( $M = 5.30$ ) than when it was violated ( $M = 2.78$ ). In addition, they were more satisfied (or less dissatisfied) when second-order justice was violated to a smaller degree ( $M = 4.45$ ) than when it was violated to a greater degree ( $M = 3.63$ ). More importantly, there was a significant interaction between the two factors ( $F(1, 76) = 5.94, p < .05$ ). Specifically, when first-order justice was present, second-order justice had a significant impact on participants' satisfaction about the service ( $M = 4.55$



**Figure 2.** The interacting effect of first- and second-order justice on evaluation and satisfaction (Study 2).

vs. 6.05;  $F(1,76) = 14.66, p < .01$ ). In contrast, when first-order justice was absent, second-order justice had no effect ( $M = 2.7$  vs. 2.85;  $F < 1$ ).

## Discussion

Results from Study 2 support the hypothesis that violation of the FIFO principle is a more salient cue of social injustice, and queuers tend to concentrate on this aspect as the first priority. They do care about relative waiting time (consistent with results from Study 1), but only after the FIFO condition is met.

Despite a few differences, the two conditions in Study 2, where first-order justice was observed, are similar to the two conditions in Study 1. If comparisons are made for the results across studies, it is interesting to note that the mean satisfaction level is higher for the two conditions in Study 2 ( $M = 5.3$ ) than their counterparts in Study 1 ( $M = 3.57$ ). It should be noted that although Study 1 was run among Hong Kong participants, Study 2 involved participants from the United States. This difference could be at least

partly due to different expectations about the efficiency of government agencies in Hong Kong versus those in the United States. Hong Kong government offices have been consistently rated as one of the most efficient in the world. As a result, people in Hong Kong may have high expectations toward the service provided by government agencies and would feel more dissatisfied when such expectations were not met (e.g., when they had to wait a long time to receive a business license).

Note that in Studies 1 and 2 when there was a difference in waiting duration between the participant and the friend, the reason underlying such a difference was not specified. In other words, the participants were left to come up with their own attributions about the injustice. For example, a person might imagine that an unusually large number of applications were submitted just before she submitted her own. Alternatively, she might learn that some clerks at the registration office recently took vacation, and a huge number of applications piled up at the office. In the former case, the injustice is attributed to causes outside the control of the service provider (fluctuations in the arrival rate of cases), whereas in the latter case, such injustice is attributed to causes related to the service provider (poor management of work load). The next study examines how attributions about the cause of second-order social injustice affect the way consumers feel about it.

### STUDY 3

#### Subjects, Design, and Procedure

In the current study, second-order injustice can be attributed either to fluctuations of departure rate or to the service providers. In the former case, consumers may only feel unlucky for having entered the queue at the wrong time. In the latter case, however, consumers who suffered from social injustice would feel more dissatisfied, as they would believe it to be the fault of service providers.

***Second-Order Justice.*** A total of seventy-four college students at a university in Hong Kong participated in this study for partial course credit and were randomly assigned to one of four conditions in a 2 (second-order justice: high vs. low)  $\times$  2 (attribution: departure rate vs. service provider) between-subjects design. In all conditions, participants received the following instructions: "Imagine that you are going to dinner with a friend at a restaurant in town. This is a very popular restaurant and has received good ratings from several restaurant guide books (e.g., Zagat). Unfortunately, this restaurant does not accept reservations and one must wait in line to get in. As soon as a table becomes available, the first group in line will be served." All participants were told that they waited a total of 45 minutes before being seated at a table. Information regarding another two groups of people (both in parties of two) was also provided. The other

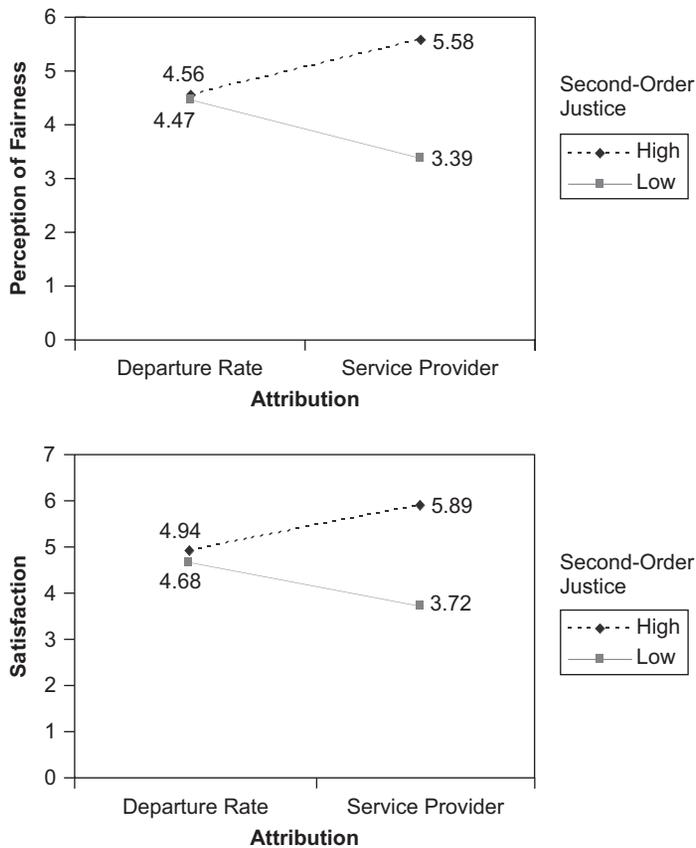
two groups got seated at the same time as the participants. However, second-order justice was manipulated by varying the time at which the two groups arrived. In the high second-order justice conditions, participants were told to imagine that the other two groups arrived right after themselves. Therefore, all groups waited 45 minutes. In the low second-order justice conditions, however, participants were told that the other two groups arrived 45 minutes later and all three groups (they and the other two groups behind) got seated at that time. In other words, the participants waited 45 minutes, whereas the other two groups did not have to wait.

**Attribution.** In the “departure rate” conditions, participants were told that, as some customers finished eating, three tables were cleared and thus all three groups were seated at the same time. In the “service provider” condition, they were told that, upon seeing many people waiting, the restaurant opened up a seating area formerly not in service and therefore all three groups got seated. In the former case, if there is an injustice, it happened because there were no tables available, and people might infer that they came at a bad time when most people had just started eating. In the latter case, however, they might blame the restaurant for not opening the seating area earlier and thus feel more dissatisfied.

Participants rated their positive and negative affect on the same scales as used in Study 1. Then they were asked whether they perceive the waiting process to be fair (1 = very unfair, 9 = very fair). Finally, they were asked to indicate their satisfaction with the service at the restaurant based on their experience so far on a 9-point scale (1 = not at all satisfied, 9 = very satisfied).

## Results

The correlation between the three positive valence affective measures (calm, happy, relieved) was high ( $\alpha = 0.78$ ); hence, their mean was used as a measure of *positive* affect. The mean of the three negative valence affective measures (annoyed, angry, frustrated;  $\alpha = 0.85$ ) was used as a measure of *negative* affect. Two ANOVAs with positive affect and negative affect as dependent variables, and second-order justice (high vs. low) and attribution (departure rate vs. service provider) as independent variables revealed a significant main effect of second-order justice (positive affect:  $F(1, 70) = 5.49, p < .05$ ; negative affect:  $F(1, 70) = 4.91, p < .05$ ). Under low level of second-order justice, participants felt less positively ( $M = 4.28$ ) than under high level of second-order justice ( $M = 5.11$ ). In addition, they felt more negatively under low level of second-order justice ( $M = 4.86$ ) than under high level of second-order justice ( $M = 3.89$ ). This effect is qualified by a significant interaction between second-order justice and attribution (positive affect:  $F(1, 70) = 5.31, p < .05$ ; negative affect:  $F(1, 70) = 4.43, p < .05$ ). Specifically, when attributions were made to different departure rates, second-order justice did



**Figure 3.** The interacting effect of second-order justice and attribution (Study 3).

not have an impact on participants' affect ( $F_s < 1$ ). But when attributions were made to service providers, second-order justice produced a significant effect on affect (positive affect:  $M_{low-justice} = 3.61$  vs.  $M_{high-justice} = 5.30$ ,  $F(1, 70) = 10.80$ ,  $p < .01$ ; negative affect:  $M_{low-justice} = 5.67$  vs.  $M_{high-justice} = 3.73$ ,  $F(1, 70) = 9.33$ ,  $p < .01$ ).

Analysis of other dependent variables revealed similar results (see Figure 3). There was a significant main effect of second-order justice (fairness:  $F(1, 70) = 8.97$ ,  $p < .01$ ; satisfaction:  $F(1, 70) = 8.85$ ,  $p < .01$ ). Under low level of second-order justice, participants perceived the experience to be less fair ( $M = 3.95$ ) and felt less satisfied ( $M = 4.22$ ) than under high level of second-order justice ( $M = 5.08$  and  $M = 5.43$  for fairness and satisfaction, respectively). Moreover, there was a significant interaction between second-order justice and attribution (fairness:  $F(1, 70) = 7.73$ ,  $p < .01$ ; satisfaction:  $F(1, 70) = 5.47$ ,  $p < .05$ ). Specifically, when attributions were made to different departure rates, second-order justice did not have an impact ( $F_s < 1$ ). But second-order justice led to a significant effect when attributions were made to service providers (fairness:  $M_{low-justice} = 3.39$  vs.

$M_{high-justice} = 5.58, F(1, 70) = 16.67, p < .001$ ; satisfaction:  $M_{low-justice} = 3.72$  vs.  $M_{high-justice} = 5.89, F(1, 70) = 14.12, p < .001$ ).

## Discussion

Consistent with findings from the previous two studies, it was found that people felt more dissatisfied when they realized that they had waited longer than others. More importantly, they only felt more dissatisfied when the injustice was attributed to the service provider. Interestingly, when attributed to different departure rates, second-order injustice did not lead to greater dissatisfaction. Consumers may only consider themselves unlucky to have joined the queue at a bad time.

## GENERAL DISCUSSION

Previous research has defined social justice in queue settings solely in terms of conformity to the first-in, first-out principle. In this research, another dimension of justice is identified (independent of the FIFO principle) that also plays an important role in people's waiting experience—relative waiting duration as compared to other queuers (called second-order justice). In particular, it is found that how long others behind waited (even though it has no impact on one's own waiting time) affected one's satisfaction with the waiting experience. When queuers become aware that they have waited a longer period than those behind, they experience more negative affect and are less satisfied. These findings join a stream of research (e.g., Schmitt, Dube, & Leclerc, 1992) to suggest that queues are social in nature and that people in waiting situations make social comparisons with one another (Zhou & Soman, 2003). Although Zhou and Soman (2003) found that queuers' affective experiences and decision-making are affected by the *number* of people behind, this research suggests that they also care about *what happens* to the people behind in the queue (how long those behind waited compared to themselves).

In addition, it was found that the FIFO rule is of primary concern ("first-order") when people assess and try to protect themselves from instances of social injustice. This is not surprising because FIFO is still the most salient and most easily implemented principle for monitoring social justice. Equity in total waiting time ("second-order") only becomes important when people are sure that they are being served on a FIFO basis. The results also imply that once the FIFO rule is violated, the magnitude of the difference in waiting duration across customers matters to a much lesser extent. Such interaction results between first-order and second-order justice from Study 2 closely mimic the findings by Hui and colleagues (2004) on the relationship between outcome quality and process quality. Thus, the current research contributes to the two-factor theory (Hui et al., 2004; Maddox, 1981) by identifying additional qualifying and vantage factors in

satisfaction research. On the other hand, from a practical standpoint, the implications for service providers is that they should first ensure that the FIFO rule is being implemented in the queue system, and then try to minimize difference in waiting durations across customers.

Finally, it was found that attributions made by queuers about the cause of social injustice influenced the way they responded. When queuers perceive differences in waiting duration and such violation of second-order justice is attributed to random fluctuations in arrival/departure rate, those who have waited longer might just feel that they are unlucky, and second-order injustice may have very little effect on satisfaction. In contrast, when attributed to the service provider, second-order injustice can exert a large impact on customer satisfaction. The implication of this finding is that when instances of second-order injustice (i.e., difference in waiting time across customers) are detected, service providers should try to direct customers' attributions toward causes outside the providers' control. More specifically, in the example of restaurants, service providers should let customers attribute the injustice to random fluctuations in arrival and departure rate rather than telling customers that a seating area not formerly used has just been opened for service.

One limitation of this research is that, to maximize internal validity, hypothetical scenarios rather than actual waiting experiences were used as stimuli. Although it would be ideal to test the hypotheses with consumers who were actually waiting in queues, practical considerations, such as lack of control in the field and poor ecological validity of laboratory recreations of queues, prevented us from doing so. Therefore, it should be acknowledged that the current research is simply a study about how consumers would behave in a queuing situation, rather than a study of consumer decisions made in a queue.

Similar to Zhou and Soman (2003), the current research focuses on investigating comparisons made with those *behind* (instead of those ahead) in the line. Such a focus is adopted because of two considerations. First, based on rational cost/benefit analyses, the waiting duration of those behind normally would not have an impact on one's own waiting time. Finding such an effect is therefore particularly interesting, suggesting that queues constitute a social system where issues of social justice play a central role in people's overall experience. Second, it is reasonable to expect that, to guard against instances of social injustice and protect their own self-interests, people are more likely to attend to those behind them in the queue. For instance, when it comes to first-order justice (FIFO), people would naturally focus on monitoring others who joined the queue later (rather than those who joined earlier) to make sure that those behind don't get served ahead of themselves. When it comes to second-order justice, it is also conceivable that people may tend to look behind as they may lack information about the waiting duration of others who arrived before them. Having said that, one could also imagine situations where comparisons are made with those ahead in the line. For example, a queuer

may experience a sense of frustration if she observes that the line in the front has been moving fast but suddenly stagnates when she gets closer to the point of service. Future research could study second-order justice in the context of comparisons made with people ahead in the queue.

The studies were conducted both in Hong Kong (Study 1 and Study 3) and in the United States (Study 2), and it is reassuring that the effects of second-order justice seem to be robust across different cultures. However, as mentioned earlier, some culture differences may exist. For example, mean satisfaction level with the government agency was higher among the U.S. participants in Study 2 than the Hong Kong participants in Study 1, and this could be due to difference in consumers' service expectations. In addition, it would be interesting to study cultural differences in the effect of second-order justice. Two arguments could be made that lead to very different predictions. On one hand, it has been shown that people from Eastern cultures (vs. Western cultures) are more likely to rely on social context as references to make comparisons (Markus & Kitayama, 1991). It is possible that Easterners will pay more attention to how long others in the queue have waited. As a result, the effect of second-order justice may be greater in Eastern than in Western cultures. On the other hand, prior literature has suggested major cultural differences in the way people make attributions about behaviors and events (Choi, Nisbett, & Norenzayan, 1999). That is, although Westerners tend to perceive behaviors and events as a product of the internal attributes of the actor, Easterners are more likely to take into account many other important situational determinants. Therefore, when an instance of second-order injustice is detected and customers are left to come up with their own accounts of how it happened, Westerners may tend to attribute it to the service provider and Easterners to other factors such as departure rates. Based on the results from Study 3, it could be predicted that second-order justice would have a larger impact in Western than in Eastern cultures. Future research could examine which of the two processes prevails and explore whether the effect of second-order justice differs across cultures.

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