

# Perceived Price Fairness in Pay-What-You-Want: A Multi-Country Study

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## Abstract

The present study investigated perceived price fairness (PPF) and aimed to reveal determinants of PPF within the participative pricing mechanism pay-what-you-want (PWYW). Results support the hypothesis that PPF in PWYW conditions is higher than PPF in ordinary price setting (OPS) conditions. Determinants of PPF in PWYW conditions were identified to include both the price level and the degree of social interaction. Whereas the results conform to previous research that PPF correlates negatively with the price level in OPS conditions, this study reveals a positive correlation between the price level and PPF in PWYW conditions, which suggests that the buyer's mental model of PPF varies with the process of price determination. Therefore, future research should re-examine consequences of PPF in PWYW conditions. Additionally, results show cross-country differences of PPF and the influence of the price level on PPF.

## Keywords

Perceived Price Fairness, Pay What You Want, PWYW, Willingness to Pay, Participative Pricing, Price Determination, Price Evaluation, Perception

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## 1. Introduction

The price of a product or service significantly influences customers' perception and behaviour, and therefore, pricing is a challenging but important managerial decision to make [1]. Pricing decisions carry not only the chance to differentiate from competitors, but also carry the risk of disgruntling customers [2] [3].

In 2000, online retailer Amazon tried to implement a pricing strategy where new and existing customers were being shown different prices. Amazon assumed that existing customers had lower price sensitivity than new customers and thus

offered identical products at higher prices for existing customers. The DVD “Titus”, for instance, was sold between \$22.74 and \$26.24. The price gap led to massive protests from existing customers, because they felt they were treated unequally. In the end, Amazon closed the price gap, paid the price difference of higher paid prices back, and suffered from reputational damage in the aftermath [4] [5] [6].

Not only do economic motives play an important role in a customer’s price perception and a customer’s<sup>1</sup> decision to purchase a product, but so do subjective perceptions and preferences. As the example of Amazon shows, the construct of perceived price fairness (hereinafter referred to as “PPF”) is a central aspect of the buyer’s response to prices. PPF has a positive influence on the customer’s intent to purchase [7] [8], a positive influence on customer satisfaction [9] [10], a positive influence on customer loyalty [11], and a positive influence on the buyer’s attitude towards the seller [12]. Additionally, Oh [13] showed a positive correlation between PPF and perceived quality. Perceived price unfairness, however, can cause customers to feel the need to protect themselves from future unfair treatment, via complaints, return of goods, and negative word of mouth. Perceived price unfairness may also lead to sanctions by the customer, such as switching to a competing company or retaliation in court [5] [6].

The classic pricing policy aims to maximise the company’s profit by appraising and determining the ideal price offer in regards to competition and customer perception. But what if customers themselves could set the price? In contrast to fixed prices, participative pricing mechanisms give customers the opportunity to contribute actively in the process of price setting.

## 2. Conceptual Framework

### 2.1. Pay-What-You-Want

The pricing mechanism pay-what-you-want (hereinafter referred to as “PWYW”) provides for a special form of customer participation. In PWYW situations, the “buyer’s control over the price setting is at a maximum level; the buyer can set any price above or equal to zero, and the seller cannot reject it” [14]. In recent history, there have been many studies on applicability, benefits, and influential determinants in PWYW situations, as summarised in the following.

Decisive for the success of a PWYW offer are the characteristics of the product offered. Kim, Natter, and Spann [15] assume that in PWYW situations, price paid increases by just 20 percent of the increase in variable costs. Moreover, offering PWYW decreases the average price paid but also increases the amount of customers [14] [16]. As such, PWYW is suitable for short-term offers and promotions rather than applicable as a permanent pricing strategy and is more dedicated for products with high fixed and low variable costs [14] [15]. A good example for the successful application of PWYW would be a restaurant that is

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<sup>1</sup>For the sake of simplicity, the masculine form is used throughout this document, but should be taken to refer to persons of any gender.

temporarily not running at full capacity [14] [16] [17]. Introducing the participative pricing mechanism as a time-limited promotion could help use up spare capacity and help win new customers, segueing from applicability to benefits of PWYW.

Customers generally prefer participative pricing mechanisms to conventional pricing mechanisms [14] [18] [19]. Chandran and Morwitz [18] stated that customers who perceive a high level of control in the process of price determination also show higher intentions to purchase. This is in line with findings of Haws and Bearden [20], who reported that customers are more likely to pay a price if they were actively participating in the price building process. Additionally, PWYW can attract new customers due to its innovative and unconventional character [14].

If customers acted fully rationally and followed the concept of homo oeconomicus, they would extensively use their chance of free-riding and never pay a price above zero [21]. However, people do pay a price significantly higher than zero [14] [19] [22] [23] [24] [25]. Up until now, ten determinants have been identified to influence the customer's willingness to pay in PWYW situations. Kim *et al.* [14] identified altruism, fairness, income, loyalty, price consciousness, reference price, and satisfaction as influential determinants. More recently Kim, Kaufmann, and Stegemann [26] added the construct "high level of reputation" to the list of influential determinants. Hilbert and Suessmair [27] added to the list by indicating that social norm compliance influences a customer's willingness to pay, although their results were not statistically significant. Subsequently, Dorn and Suessmair [28] showed the positive effect of personal interaction on a customer's willingness to pay during a payment situation in the PWYW context.

## 2.2. Perceived Price Fairness

Fairness is a strong determinant that influences the buyer's willingness to pay in PWYW situations [29]. Whereas fairness as a determinant represents the influence of the buyer's willingness to be fair on prices paid, PPF refers to a buyer's assessments of whether a seller's price is reasonable, acceptable or justifiable [6] [30]. Considering the price setting process in PWYW situations, the concepts of PPF and fairness as influential determinants overlap. However, since fairness is just one of many influential determinants of willingness to pay in PWYW situations, the willingness to pay a fair price does not necessarily result in a price paid which the buyer perceives as fair. PPF in the PWYW context has to be examined yet.

Until today, there is no unique definition of PPF [5] [31]. However, what all existing definitions have in common is that they are based on one or more of the three socio-psychological theories: The *dual entitlement principle*, the *equity theory*, and the *theory of cognitive dissonance*. The *dual entitlement principle* by Kahneman, Knetsch, and Thaler [32] [33] is a theory of procedural justice that points to the question of whether or not price-determining processes refer to

general standards and rules. This principle is mainly used to assess price increases [5]. According to the *equity theory*, distributive justice is realised when the rewards minus the costs divided by the investments of one party are equal to the rewards minus the costs divided by the investments of the other party [34] [35] [36].<sup>2</sup> Following this theory, the buyer's price fairness perception depends on his perceived input-output ratio compared to all involved reference points such as previous purchases and other buyers [5]. Festinger's [37] *theory of cognitive dissonance* can explain buyers' reaction to perceived price unfairness. The theory assumes that people seek internal consistency and that disparity in a buyer's perceived input-output ratio causes cognitive dissonances. The massive protests by existing customers in the previous example of Amazon illustrate people's reactions to such cognitive dissonances, trying to restore their cognitive balance again [5].

Although there is no unique definition of PPF, existing literature can be categorised according to their different approaches. The majority of studies attribute the concept of a "reference price" to play a central role in the buyer's price fairness perceptions [6] [12] [38]-[45]. Xia *et al.* [6], for instance, stated that "price fairness judgments involve a comparison of a price or procedure with a pertinent standard, reference, or norm" (p. 1) and Frey and Pommerehne [41] pointed out that buyers are "evaluating 'fairness' with reference to an adaptively determined 'just price'" (p. 296). According to Padula and Busacca [46], however, PPF "can be defined as the consumers' judgement of whether the actual price is 'just' compared to his assessment of the economic value that the supplier has captured from the exchange relationship with him" (p. 34). This is in line with Bolton *et al.* [39] and Martins and Monroe [47], who also considered the seller's reference profit as decisive for the buyer's PPF. Kalapurakal, Dickson, and Urbany [48] and Oh [13] argued that reference transactions play "an extremely important role in shaping such (price fairness, remark of the author) perceptions" [48]. Whereas previously mentioned authors focused on comparisons with reference prices, the seller's profit, or reference transactions, Bearden [20] and Kukar-Kinney *et al.* [30] saw the seller's absolute price as the crucial factor for the buyer's PPF. Interestingly, Dickson and Kalapurakal [49] believed that buyer's "perceptions about price fairness are affected not only by the observed price level (outcome) but also by the price-rule (process) that generates it: a fair price is one that results from a fair pricing rule" (p. 430), which means that the buyer's evaluated PPF in a PWYW situation allows conclusions to be drawn on price fairness in general within the pricing mechanism PWYW.

### 2.3. Formulation of the Hypotheses

Dorn [29] assumed that in PWYW situations, the buyer's price fairness perception is at a maximum level because the buyer can independently determine the price. This assumption builds on studies by Weiner [50], Chandran

<sup>2</sup>Distributive justice is realised, when  $\frac{\text{rewards of } A - \text{costs of } A}{\text{investments of } A} = \frac{\text{rewards of } B - \text{costs of } B}{\text{investments of } B}$ .

and Morwitz [18], and Haws and Bearden [20]. They showed that customers perceive a price as fairer if they are participating in the price setting process (compared to a company-determined fixed reference price, even if the self-determined price is higher). Chandran and Morwitz [18] additionally noted that the buyer's opportunity to participate in the price setting process increases his satisfaction and leads to a higher intention to purchase. Although it is widely believed that the price building mechanism PWYW implies a high PPF, this has not been empirically tested yet. This study is the first to investigate PPF in a PWYW context.

H<sub>1</sub>: PPF in a PWYW context is significantly higher than PPF in an ordinary price setting context.

Additionally, this study aims to identify influential determinants of PPF in a PWYW context. Several determinants have already been identified for PPF, but only within ordinary price setting (hereinafter referred to as "OPS") conditions. Not all of them are potential determinants in PWYW conditions. Many studies focused on determinants influencing the buyer's PPF when the seller increases the price of a product or service [30] [32] [33] [38] [39] [40] [41] [51]-[60]. However, because there are no price changes by the seller in PWYW situations, determinants for PPF in the case of price increases are irrelevant for this study. Also not relevant for PPF within PWYW are studies regarding geographic price differentiation [42], time-related price differentiation [43], or any other price differentiation [61]-[66], simply because the seller does not determine the price. Potential influential determinants of PPF in PWYW situations are the price level, the degree of social interaction, and the buyer's cultural background.

Kamen and Toman [67] investigated the influence of the price level on PPF. They developed the *fair price theory*, which states that a buyer has a fair price for a product or service in mind when he purchases it and that he is unwilling to pay a higher price. In line with the *fair price theory*, Bearden *et al.* [68] as well as Maxwell [69] assumed a negative correlation between the price level and PPF. This assumption will be tested in both OPS and PWYW conditions.

H<sub>2a</sub>: PPF correlates negatively with the amount paid in OPS conditions.

H<sub>2b</sub>: PPF correlates negatively with the amount paid in PWYW conditions.

Kim *et al.* [14] suggested that in PWYW situations, the social distance between the buyer and seller plays a significant role in the buyer's price determination. Subsequently, Dorn and Suessmair [28] provided evidence that, in PWYW, the "amount of social presence and personal interaction" (p. 14-15) significantly influences the buyer's perception and behaviour due to "the impact of the influential construct social agreeableness on a PWYW decision". Although there haven't been any studies investigating the influence of the degree of social interaction on PPF, the literature on PWYW suggests that this may be an important factor influencing the buyer's PPF.

H<sub>3</sub>: The buyer's PPF in a PWYW situation varies with the degree of social interaction.

As this study was conducted in several countries, differences in PPF in

PWYW situations between countries shall be examined. While both PPF and PWYW are relatively well investigated constructs, only few studies dealt with one of the constructs in a multi-country environment. It can be assumed that people from different sociocultural backgrounds differ in their perception of price fairness. Indeed, Mattila and Choi [70] showed different price fairness perceptions between South Korean and US consumers and Bolton *et al.* [71] provided evidence for “cultural differences in perceptions of price fairness” (p. 574) between Chinese and US consumers. Because influential determinants for PPF in PWYW situations may be more or less valid across cultures, differences between countries will be examined.

H<sub>4a</sub>: The influence of price level on the buyer’s PPF in a PWYW context varies between countries.

H<sub>4b</sub>: The influence of the degree of social interaction on the buyer’s PPF in a PWYW context varies between countries.

### 3. Research Design

#### 3.1. Methodology

Widely applied in research on PPF, a questionnaire was used for investigating PPF in a PWYW context [20] [39] [40] [41] [42] [48] [52] [54] [58] [60] [63] [68] [69] [72]-[79]. As this study was conducted in several countries, the questionnaire was set up online and was available simultaneously in all countries between 22<sup>nd</sup> of July and 25<sup>th</sup> of August 2015.<sup>3</sup> The survey launched in Australia, Chile, China, Germany, Italy, Japan, Poland, Qatar, Singapore, United Arab Emirates, and the United States of America and was distributed via mailing lists from universities, research forums, and academic Facebook groups. Hence, most of the participants were students and members of universities. Prior to the data collection, a minimum sample size of 100 respondents per country was defined; sufficient data was collected in Australia ( $n = 132$ ), Germany ( $n = 121$ ), Poland ( $n = 103$ ) and the USA ( $n = 123$ ).

To collect bias-free data across countries, a homogeneous reference product was needed, which is standardised, comparable, and equal for all participants across countries. McDonald’s Big Mac was chosen as the reference product due to its popularity and standardisation all over the world. The Big Mac has already been an object of investigation in research. In 1986, *The Economist* magazine introduced the *Big Mac Index*, a survey that uses the price of a Big Mac as a benchmark to measure the purchasing power parity between countries. Consequentially, McDonald’s Big Mac suits well as the reference product for the purpose of this study.

#### 3.2. Structure and Contents of the Questionnaire

Because of the international distribution of the survey, the questionnaire was set up in English. The questionnaires were identical across countries, only differing

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<sup>3</sup>A pre-test prior to the launch solely suggested using home currencies for each country instead of using US-Dollars for all countries.

in terms of the currency used.

Firstly, it was declared that all information will be treated confidentially. Then, the participant was asked if he has ever eaten McDonald's Big Mac, in order to exclude people who do not know the reference product.

Afterwards, the participant was familiarised with PWYW pricing and had to indicate his willingness to pay for a Big Mac in a PWYW situation. Prior to opening with the survey, the participant was randomly subdivided into one of three scenarios. The scenarios only differed in the degree of social interaction during the payment evaluations.<sup>4</sup> All scenarios referred to McDonald's offering a special deal due to its 100<sup>th</sup> birthday, enabling customers to pay a self-determined price for a Big Mac. The participant could pay online and anonymously, resulting in a print-out voucher for the Big Mac (Scenario 1), pay for the Big Mac at the counter in a McDonald's restaurant in direct contact with McDonald's employees when only the McDonald's employee is watching the payment (Scenario 2), or pay the Big Mac at the counter in a McDonald's restaurant in direct contact with McDonald's employees when the McDonald's employee as well as a couple of friends are watching the payment (Scenario 3).

Hereafter, the PPF in the PWYW situation was queried. Monroe [80] argued that price fairness simply is a subjective perception of whether a price is fair or not. Traditionally, PPF was seen as a multidimensional concept which encompasses the two dimensions of distributive price fairness<sup>5</sup> and procedural price fairness<sup>6</sup> [57] [81]. However, Chung and Petrick [1] suggested "that individuals tend to perceive price fairness globally, rather than attribute to specific outcomes and procedures" (p. 918). In line with a majority of studies, PPF was recorded as a single-item-measurement [8] [32] [39] [40] [49] [52] [53] [64] [69] [72] [78]. The participant was asked "How fair was the price I paid for the Big Mac in the previous situation?" PPF was rated on a 7-point Likert scale (1: "Unfair" to 7: "Fair"). Following Xia *et al.* [6] and to validate the single-item-measurement, the participant was also asked if the price paid was "adequate" and "justified". As "fair" correlated statistically significantly with both "adequate" ( $r(320) = 0.83$ ,  $p < 0.01$ ) and "justified" ( $r(320) = 0.70$ ,  $p < 0.01$ ), the single-item-measurement can be seen as valid.

The participant was then asked for the price he had to pay the last time he bought a Big Mac: "What did you pay for a Big Mac the last time you went to McDonald's?" Afterwards the participant had to indicate his PPF of this price in OPS conditions.

The questionnaire concluded by asking for additional information such as the participant's knowledge about PWYW and his perception about McDonald's. Finally, demographical data of the participant was collected.

<sup>4</sup>Since the degree of social interaction in a PWYW context significantly influences the buyer's willingness to pay, using various scenarios is a "commonly used methodological approach for assessing situational differences of a PWYW decision" [29].

<sup>5</sup>"representing price outcome per se" [1].

<sup>6</sup>"emphasizing the price setting process" [1].



### 3.3. Data Preparation

For bias-free results, the data had to be adjusted. As mentioned before, participants who did not know the Big Mac were excluded from further evaluations.<sup>7</sup>

Outliers, which could bias the results, had to be identified and excluded accordingly. Since the participants indicated their PPF via Likert scales, only the buyer’s willingness to pay in the PWYW situation as well as his reference price had to be tested for outliers. Outliers were not selected using Tukey’s rule [82], but with a more recent method following Carling [83] instead. He proposed “an improvement of the Boxplot rule by including the sample median in the linear combination of order statistics, rather than only the first and the third quartiles” (p. 250). Cut-off points for subjects were determined via

$$c^U = q_2 \pm \frac{17.63n - 23.64}{7.74n - 3.71} * (q_3 - q_1)$$

where  $c^U$  is the cut-off point,  $q_2$  is the median,  $n$  is the sample size, and  $q_3$  and  $q_1$  are the sample quartiles.

At the end of this screening process,  $n = 322$  with an average age of 25.68 ( $SD = 7.59$ ) years remained out of the initial sample size of  $n = 479$ . Excluding the data of 157 subjects looks questionable at first glance, but the majority of excluded data was due to subjects who did not indicate a reference price, which accounted for 124 cases.<sup>8</sup> The remaining subjects were divided into groups as listed in **Table 1**.

As a last step, a standardisation of the different currencies was necessary, since Australian participants indicated their willingness to pay and reference price in Australian Dollars, German subjects in Euros, Polish participants in Zlotys, and US citizen in US-Dollars. Because currency exchange rates vary on a daily basis, an alternative approach was used to standardise the data. As *The Economist* frequently publishes the Big Mac’s national price in the country’s home

**Table 1.** Group allocation of subjects.

	Australia	Germany	Poland	USA	Grand total
<b>Scenario 1</b>	21	34	21	29	<b>105</b>
Female	12	18	11	15	56
Male	9	16	10	14	49
<b>Scenario 2</b>	27	22	27	31	<b>107</b>
Female	17	12	14	14	57
Male	10	10	13	17	50
<b>Scenario 3</b>	29	27	24	30	<b>110</b>
Female	18	13	11	12	54
Male	11	14	13	18	56
<b>Grand Total</b>	<b>77</b>	<b>83</b>	<b>72</b>	<b>90</b>	<b>322</b>

<sup>7</sup>Three subjects from Australia, Poland, and the USA were excluded from the data.

<sup>8</sup>The outlier analysis was conducted after subjects without indicated reference prices were excluded.



currency and in US-Dollar, the most recent national reference price for McDonald's Big Mac could be gathered from a reliable source.<sup>9</sup> To standardise the data, each subject's willingness to pay as well as his last remembered reference price was set in relation to the true reference price in his country (*i.e.* how many percent of the national reference price did the subject indicate as his willingness to pay or as his remembered reference price). Then this relation was multiplied with the true reference price of the USA, to convert all prices into US-Dollars.<sup>10,11</sup>

## 4. Results

All statistical tests were conducted with a significance level of  $\alpha = 0.05$ . Widely accepted in research, Likert scales were treated as interval scales [84] [85]. Underlying assumptions for each statistical test is checked in the respective section. However, the central limit theorem allows for the assumption that the data is normally distributed. "[In] large samples the estimate will have come from a normal distribution regardless of what the sample or population data look like" [86]. According to Field [86], the data is normally distributed if the sample size is larger than 30. Accordingly, normal distribution in the sample of this study was assumed as indicated in **Table 2**.

### 4.1. Hypothesis 1

Because the same participants indicated both their PPF in PWYW and their PPF in OPS conditions, a paired-samples t-test was conducted to test the first hypothesis. On average, PPF in PWYW ( $M = 4.55$ ,  $SD = 1.80$ ) was higher than PPF

**Table 2.** Descriptive statistics across all countries and scenarios.

	Descriptive statistics					
	<i>N</i>	Minimum	Maximum	Mean	Std. Deviation	
	Statistic	Statistic	Statistic	Statistic	std. error	Statistic
PPF in PWYW	322.00	1.00	7.00	4.55	0.10	1.80
PPF in OPS	322.00	1.00	7.00	3.61	0.09	1.59
Indicated price: PWYW	322.00	0.00	6.00	2.11	0.08	1.37
Indicated price: OPS	322.00	2.00	7.48	4.59	0.06	1.11
Age	322.00	15.00	78.00	25.68	0.42	7.60
Valid <i>N</i> (listwise)	322.00					

<sup>9</sup>Data retrieved from: <http://www.economist.com/content/big-mac-index>, assessed on August 27th, 2015.

<sup>10</sup> Subject's standardised price =  $\frac{\text{subject's indicated price}}{\text{national reference price}} * \text{reference price USA}$ .

<sup>11</sup>For instance: If a subject from Poland indicates to pay 6.00 Zloty for a Big Mac and the national reference price in Poland is 9.60 Zloty, he indicates a price of 62.50% of the Polish reference price. This relation multiplied with USA's reference price of 4.79 US-Dollar for a Big Mac leads to the subject's standardised willingness to pay of approximately 2.99 US-Dollar.

in OPS conditions ( $M = 3.61$ ,  $SD = 1.59$ ) as indicated in **Table 3**. This overall difference of 0.94, 95% CI [0.73, 1.16], was highly statistically significant,  $t(321) = 8.59$ ,  $p < 0.001$ , and represented a medium-sized effect,  $d = 0.59$ .<sup>12</sup>

### 4.2. Hypothesis 2a

A Pearson product-moment correlation test was conducted to examine  $H_{2a}$ . As demonstrated in **Table 4**, the Pearson correlation coefficient  $r(322) = -0.13$ ,  $p = 0.019$  with  $R^2 = 0.017$  showed a significant negative correlation between PPF and the amount paid in OPS conditions. Because a correlation is based on linearity and the correlation coefficient gives no indication if the relationship between the variables is perfectly linear, the graphical tool Loess was also used to more precisely analyse the relation between the two variables. Loess is non-parametric and consequently does not contain any assumptions like linearity. Jacoby [87] pointed out that “loess-enhanced scatter plots often reveal relatively complex relationships that could easily be overlooked with traditional statistical modelling procedures” (p. 578). The loess curve-see **Figure 1** illustrated that PPF in OPS decreased up to an amount of approximately \$5, before it marginally increased.

**Table 3.** One-sample  $t$ -test for a comparison of the means of PPF in PWYW and PPF in OPS across all countries.

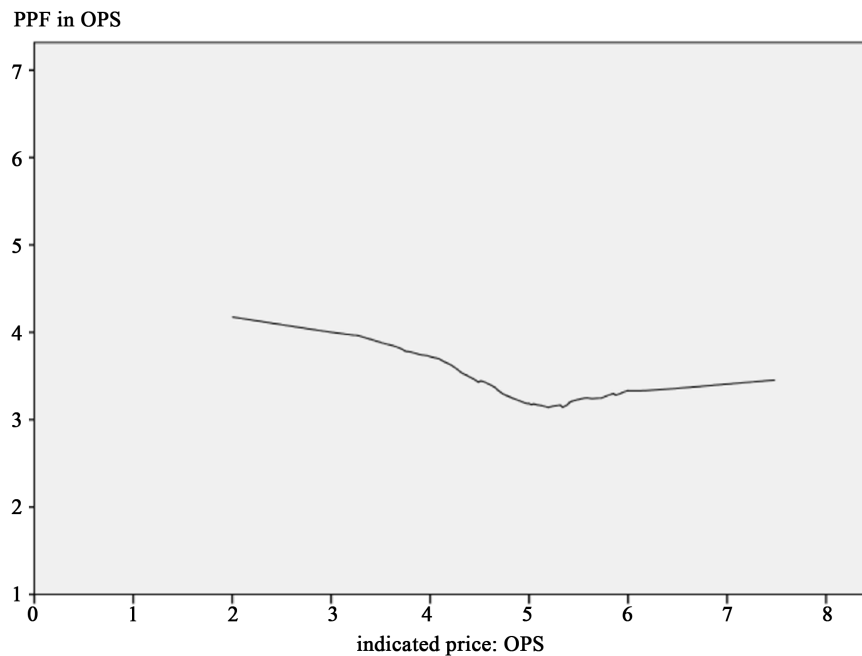
One-sample test						
Test value = 0						
	$t$	df	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference	
					Lower	Upper
PPF in PWYW	45.407	321	0.000	4.5497	4.353	4.747
PPF in OPS	40.607	321	0.000	3.6056	3.431	3.780

**Table 4.** Pearson correlation between the buyer’s PPF in OPS and his indicated price in OPS.

Correlations			
		Indicated price: OPS	PPF in OPS
indicated price: OPS	Pearson correlation	1	-0.131*
	Sig. (2-tailed)		0.019
	N	322	322
PPF in OPS	Pearson correlation	-0.131*	1
	Sig. (2-tailed)	0.019	
	N	322	322

\*Correlation is significant at the 0.05 level (2-tailed).

<sup>12</sup>Australia ( $t(76) = 3.03$ ,  $p = 0.003$ ), Germany ( $t(82) = 5.50$ ,  $p < 0.001$ ), Poland ( $t(71) = 4.58$ ,  $p < 0.001$ ), USA ( $t(89) = 4.17$ ,  $p < 0.001$ ).



**Figure 1.** Relationship between the buyer's PPF and his indicated price in OPS. Loess,  $f=0.5$ .

### 4.3. Hypothesis 2b

The Pearson correlation to investigate  $H_{2b}$  resulted in a statistically significant positive correlation coefficient  $r(322) = 0.25$ ,  $p < 0.001$  with  $R^2 = 0.062$  as indicated in **Table 5**. As shown by the loess curve in **Figure 2**, PPF in PWYW strongly increased up to an indicated price of roughly \$1, then slightly increased up to an amount of approximately \$3 before PPF very slightly decreased continuously.

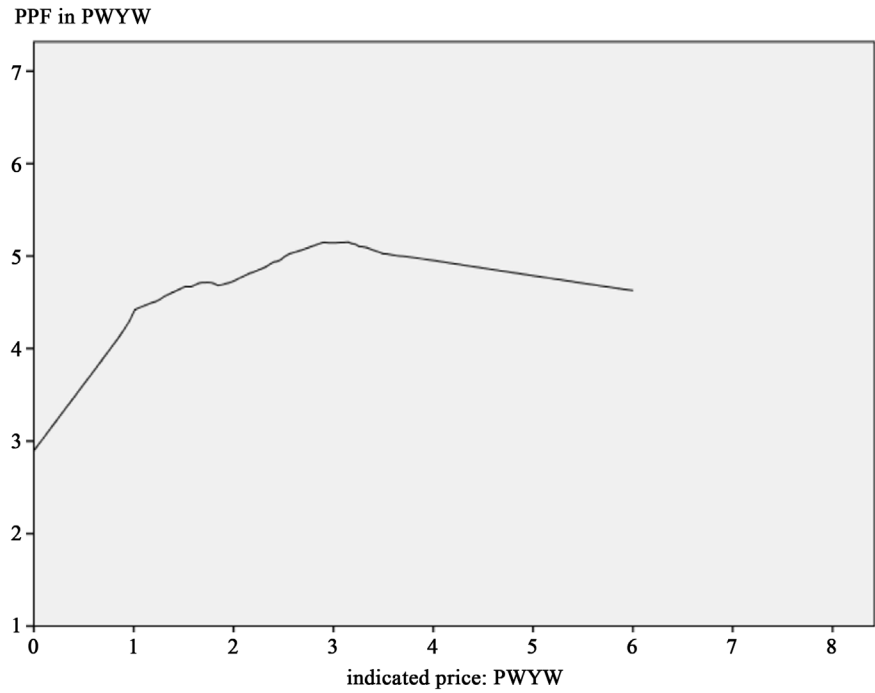
### 4.4. Hypothesis 3

For examining  $H_3$ , a one-way independent ANOVA was conducted, see **Table 6**. The buyer's PPF was defined as the dependent variable and the scenario as factor. Because the data comprised of three independent samples and Levene's test indicated equal variances ( $F(2, 319) = 0.50$ ,  $p = 0.61$ ), the one-way ANOVA was conducted without any restrictions.

As illustrated in **Table 7**, analysis of variance showed a main effect for scenario on PPF in PWYW,  $F(2, 319) = 7.16$ ,  $p = 0.001$ ,  $\eta^2 = 0.043$ . Post hoc analyses using Duncan's new multiple range test indicated that PPF was lower for participants in a scenario with a low degree of social interaction ( $M = 4.04$ ,  $SD = 1.83$ ) than for participants in scenarios with a medium ( $M = 4.66$ ,  $SD = 1.70$ ) and high degree of social interaction ( $M = 4.93$ ,  $SD = 1.76$ ). PPF did not differ significantly between participants in scenarios with a medium and a high degree of social interaction.

### 4.5. Hypothesis 4a

To check  $H_{4a}$ , the correlation coefficients of all countries were converted to  $z_r$  in



**Figure 2.** Relationship between the buyer’s PPF and his indicated price in PWYW. Loess,  $f = 0.5$ .

**Table 5.** Pearson correlation between the buyer’s PPF in PWYW and his indicated price in PWYW.

Correlations			
		PPF in PWYW	Indicated price: PWYW
PPF in PWYW	Pearson correlation	1	0.248**
	Sig. (2-tailed)		0.000
	N	322	322
Indicated price: PWYW	Pearson correlation	0.248**	1
	Sig. (2-tailed)	0.000	
	N	322	322

\*\*Correlation is significant at the 0.01 level (2-tailed).

**Table 6.** ANOVA for differences between PPF per scenario.

ANOVA					
PPF in PWYW					
	Sum of squares	df	Mean square	F	Sig.
Between groups	44.551	2	22.276	7.155	0.001
Within groups	993.154	319	3.113		
Total	1037.705	321			

**Table 7.** PPF per scenario via a Duncan post hoc test

Scenario	N	PPF in PWYW	
		Duncan <sup>a,b,c</sup>	
		Subset	
		1	2
1	105	4.038	
2	107		4.664
3	110		4.927
Sig.		1.000	0.268

Means for groups in homogeneous subsets are displayed based on observed means. The error term is Mean Square (Error) = 3.024. a. Uses Harmonic Mean Sample Size = 107.294. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed. c. Alpha = 0.05.

order to make the sampling distribution normal and to know the standard error. Subsequently, the  $z$ -score of the difference between the converted correlation of one country versus another country indicated the two-tailed  $p$ -value.<sup>13</sup>

The correlation between price level and PPF, listed in **Table 8**, was significantly different between Poland ( $r = 0.47$ ) and the USA ( $r = 0.18$ ),  $z = 2.01$ ,  $p = 0.044$  and Poland and Germany ( $r = 0.13$ ),  $z = 2.32$ ,  $p = 0.02$ .

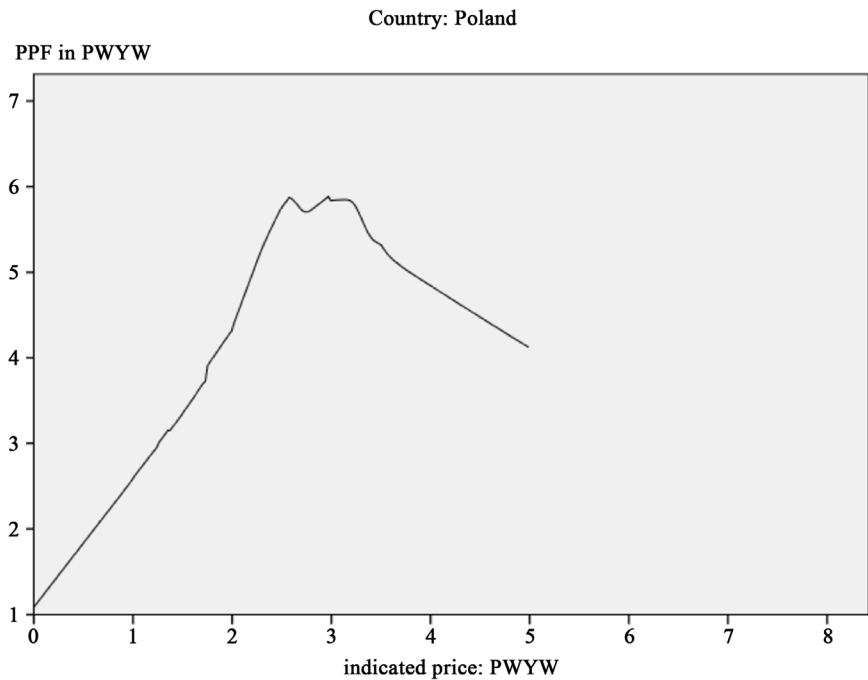
Subsequently, the loess curve for the relation between indicated price and PPF in Poland (**Figure 3**) was generated to investigate the correlation of the price level and PPF in the country with the highest correlation coefficient more precisely. Compared with the overall curve of  $H_{2a}$ , the increase of PPF up to an amount of approximately \$2.5 was steeper. After an approximately constant level of PPF between prices of \$2.5 and \$3, similar to the overall loess curve, PPF in Poland dropped more rapidly compared to the overall course.

#### 4.6. Hypothesis 4b

A  $3 \times 4$  two-way independent ANOVA was conducted to investigate whether the influence of the degree of social interaction on the buyer's PPF varies between countries. Scenario and country were defined as independent variables and the dependent variable was PPF. Levene's test indicated equal variances ( $F(11, 310) = 0.81$ ,  $p = 0.63$ ).

The ANOVA (**Table 9**) showed significant main effects for both scenario ( $F(2, 310) = 8.80$ ,  $p < 0.001$ ,  $\omega^2 = 0.054$ ) and country ( $F(3, 310) = 4.55$ ,  $p = 0.004$ ,  $\omega^2 = 0.042$ ). Duncan's new multiple range test (**Table 10** and **Table 11**) revealed that buyer's PPF was significantly lower in scenario 1 ( $M = 4.04$ ,  $SD = 1.83$ ) compared to Scenario 2 ( $M = 4.66$ ,  $SD = 1.70$ ) and Scenario 3 ( $M = 4.93$ ,  $SD = 1.76$ ). There was no significant difference of PPF between scenario 2 and 3. Looking at the main effect of the variable country (**Figure 4**), PPF in the USA ( $M = 4.99$ ,  $SD = 1.74$ ) was significantly higher than PPF in Poland ( $M = 4.04$ ,  $SD = 1.98$ ). Australia ( $M = 4.49$ ,  $SD = 1.79$ ) and Germany ( $M = 4.57$ ,  $SD = 1.59$ ) did not differ significantly from either Poland, the USA, or each other.

<sup>13</sup>This approach is based on Field [86].



**Figure 3.** Relationship between the buyer’s PPF and his indicated price in PWYW in Poland. Loess,  $f = 0.5$ .

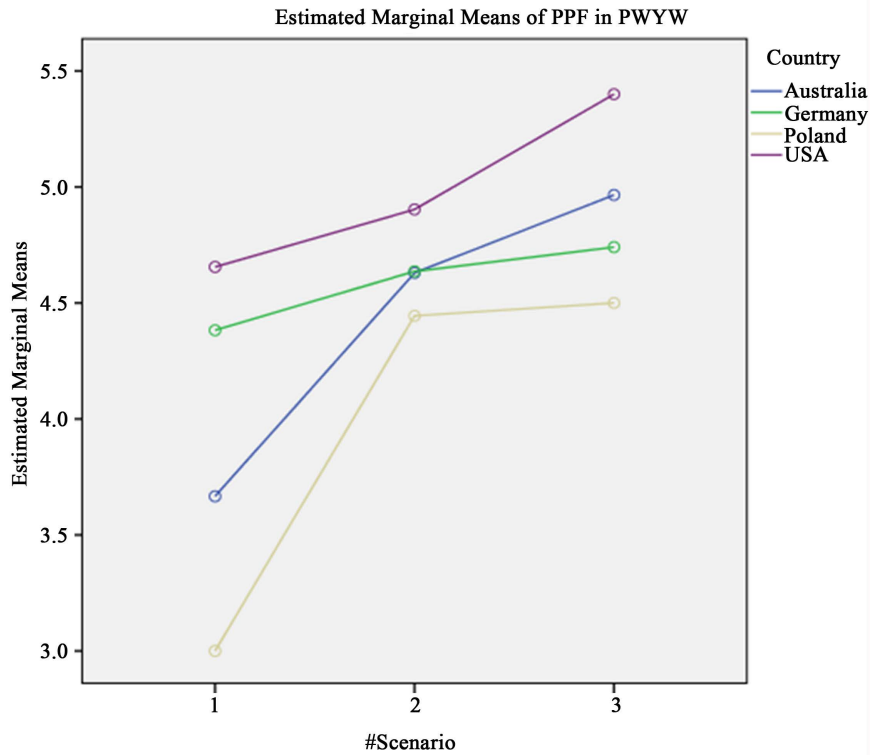
**Table 8.**  $z$ -scores of the difference between the converted correlation of price level and PPF in PWYW between countries.

		Australia	Germany	Poland	USA
$n = 77$	<b>Australia</b>		$z = 0.938$	$z = 1.372$	$z = 0.594$
$r = 0.271$			$p = 0.348$	$p = 0.17$	$p = 0.552$
$n = 83$	<b>Germany</b>	$z = 0.938$		$z = 2.318$	$z = 0.37$
$r = 0.126$		$p = 0.348$		$p = 0.02$	$p = 0.712$
$n = 72$	<b>Poland</b>	$z = 1.372$	$z = 2.318$		$z = 2.006$
$r = 0.468$		$p = 0.17$	$p = 0.02$		$p = 0.044$
$n = 90$	<b>USA</b>	$z = 0.594$	$z = 0.37$	$z = 2.006$	
$r = 0.182$		$p = 0.552$	$p = 0.712$	$p = 0.044$	

**Table 9.** Between-subjects effects in two-way independent ANOVA.

Tests of between-subjects effects						
Dependent variable: PPF in PWYW						
Source	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared
Corrected model	100.343 <sup>a</sup>	11	9.122	3.017	0.001	0.097
Intercept	6356.715	1	6356.715	2102.263	0.000	0.871
@Scenario	53.195	2	26.597	8.796	0.000	0.054
Country	41.298	3	13.766	4.553	0.004	0.042
@Scenario * country	17.160	6	2.860	0.946	0.462	0.018
Error	937.362	310	3.024			
Total	7703.000	322				
Corrected total	1037.705	321				

a.  $R$  Squared = 0.097 (Adjusted  $R$  Squared = 0.065).



**Figure 4.** Profile plot for PPF in PWYW per scenario and country.

**Table 10.** PPF per scenario via a Duncan post hoc test.

PPF in PWYW			
Duncan <sup>a,b,c</sup>			
Scenario	N	Subset	
		1	2
1	105	4.038	
2	107		4.664
3	110		4.927
Sig.		1.000	0.268

Means for groups in homogeneous subsets are displayed, based on observed means. The error term is Mean Square (Error) = 3.024. a. Uses Harmonic Mean Sample Size = 107.294. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed. c. Alpha = 0.05.

**Table 11.** PPF per country via a Duncan post hoc test.

PPF in PWYW			
Duncan <sup>a,b,c</sup>			
Country	N	Subset	
		1	2
Poland	72	4.042	
Australia	77	4.494	4.494
Germany	83	4.566	4.566
USA	90		4.989
Sig.		0.072	0.089

Means for groups in homogeneous subsets are displayed, based on observed means. The error term is Mean Square (Error) = 3.024. a. Uses Harmonic Mean Sample Size = 79.944. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed. c. Alpha = 0.05.



There was a non-significant interaction effect between scenario and country on PPF,  $F(6, 310) = 2.86, p = 0.462, \omega^2 = 0.018$ .

## 5. Discussion

### 5.1. Interpretation of the Results

The aim of this study was to investigate PPF as well as to identify influences on PPF within the pricing mechanism PWYW. Therefore, a questionnaire-based survey was carried out. It was hypothesized that PPF in a PWYW situation is significantly higher than PPF in an OPS situation. With a statistical significance of  $p < 0.001$ , the result supports this hypothesis. This is in line with studies by Weiner [50], Chandran and Morwitz [18], and Haws and Bearden [20], who showed that buyer's participation in the price building process leads to higher PPF. In this study, PPF in a PWYW context is 26% higher than PPF in an OPS context. Although the PPF in a PWYW situation is higher than PPF in an OPS situation, the result does not support Dorn's [29] assumption that the price mechanism PWYW entails a maximum amount of PPF, because PPF in PWYW is rated with an average of 4.55 out of 7. The buyer's perceived fairness of a price could be higher. This study cannot give any indications if there are price building mechanisms in which PPF is higher than in PWYW, since this study solely comprises investigations on PPF in PWYW and OPS conditions.

The first potential determinant of PPF in a PWYW context examined was the amount paid in PWYW conditions. Bearden *et al.* [68] and Maxwell [69] showed a negative correlation between PPF and price paid in OPS conditions which is statistically supported by this study, having said that it must be considered that PPF in OPS only shares 1.7% of the variability in the indicated price. The loess curve shows that PPF only decreases up to an amount paid of approximately \$5. This is an unexpected observation that cannot be set into relation to other studies yet. Further and more detailed investigations of the correlation of offer price and PPF in OPS conditions are necessary to find reasons for the course of the loess curve observed.

In contrast to the negative correlation of price paid and PPF in OPS conditions and in contrast to  $H_{2b}$  (that PPF also correlates negatively with the amount paid in PWYW conditions), the correlation between the variables in a PWYW context is statistically significantly positive with  $p < 0.001$ . Thus,  $H_{2b}$  has to be rejected. However, the price paid cannot be removed from the list of potential determinants for PPF in PWYW. In fact, the results rather suggest that the indicated price is a determinant for PPF, but the other way around from what was expected. The higher the buyer's indicated price, the higher his PPF.

Interestingly, a price paid of \$0 in PWYW is, according to the loess curves in **Figure 1** and **Figure 2**, perceived as less fair than a price paid of \$4 in OPS conditions. The increasing loess curve in a PWYW context, contrary to the decreasing loess curve in an OPS context, indicates that the concept of PPF varies depending on price setting conditions. Whereas in OPS conditions, buyers evaluate the fairness of a price the seller determines, they evaluate the fairness of their

own determined price in PWYW. However, the results of this study suggest that the subject of evaluation for PPF in PWYW may not be the price itself, but rather the subject who determines the price. The subject of evaluation may switch from the seller to the buyer accordingly. Thus, the price might just be an indication for the buyer if the subject who determines the price is fair. This mental model is in line with results of studies of Gneezy, Gneezy, Riener, and Nelson [88] and Jang and Chu [23], who showed that consumers pay higher prices in PWYW because they care more about their self-image rather than their loss to the companies. Accordingly, fairness is attributed to the determining person instead of to the price itself.

Examining the loess curve of price level and PPF in PWYW shows that PPF increases up to an amount paid of approximately \$3. The prices between \$0 and \$3 may be perceived as less fair, because the buyer feels like he is not paying a fair amount towards the seller. Reaching an amount of \$3, the loess curve slightly decreases. A price level could have been reached that is perceived as fair towards the seller. Higher indicated prices seem not to increase the buyer's PPF in PWYW.

After having examined the correlation between PPF and the price paid, it was investigated if the degree of social interaction influences the buyer's PPF in a PWYW situation.  $H_3$  assumed that PPF changes with a varying degree of social interaction. Indeed, in the anonymous online payment situation without social interaction PPF was significantly lower than PPF in a scenario including direct contact with either only McDonald's employees or McDonald's employees and friends. Thus,  $H_3$  was supported. Having friends that were watching in Scenario 3 increased the PPF slightly by 5.6%, but this difference was not significant. The fact that PPF increases with an increasing amount of social interaction could be expected due to the positive relationship of PPF and price paid observed in  $H_{2a}$  in combination with the positive effect of social interaction on the buyer's willingness-to-pay in PWYW situations according to Dorn [29]. This result supports the findings of Kim *et al.* [14] and Dorn and Suessmair [28]: The social distance between buyer and seller does influence the buyer's perception and behaviour. In PWYW situations, PPF increases with an increasing degree of social interaction.

Following the result of  $H_{2b}$ , it can be assumed that the amount paid has an influence on the buyer's PPF.  $H_{4a}$  is related to  $H_{2b}$  and assumes differences of the influence of price level on the buyer's PPF in a PWYW context between countries. The test results of  $H_{4a}$  show that the influence of price level indeed varies between countries. The correlation between price level and PPF in Poland is significantly higher than the correlation in Germany ( $p = 0.02$ ) and the correlation in the USA ( $p = 0.044$ ). Taking a closer look at Poland's loess curve shows that the PPF of Polish participants changes more rapidly depending on their determined price. This indicates that they are more sensitive to the amount they pay. The price of approximately \$3 seems to be the critical price where the course of PPF switches from *the price getting more fair* to *the price getting less fair* with

increasing prices. However, as this study is somewhat explorative in character, these results should be seen as a first indication for the underlying processes. Further investigation between and within the countries are necessary for finding the causes of the observed phenomena.

H<sub>4b</sub> assumed that the influence of the degree of social interaction varies between countries. The results reveal a main effect for scenario<sup>14</sup> and a main effect for country. PPF in the USA is significantly higher than PPF in Poland, which is in line with the findings of Mattila and Choi [70] and Bolton *et al.* [71], who suggested cross-cultural differences in PPF. Dorn [29] showed that for US citizens, loyalty has a significantly higher influence on PWYW decisions compared to Polish citizens. As such, the American origin of McDonald's may be the reason for the statistically significantly higher PPF of participants from the USA.

However, results did not support H<sub>4b</sub>, as it investigated whether the influence of the degree of social interaction on buyer's PPF varies between countries. Results did not show a significant interaction effect between scenario and country ( $p = 0.462$ ). Firstly, this suggests that the influence of the degree of social interaction does not vary between countries, but it must be considered that this study only comprises countries with very similar cultures. Australia, Germany, Poland, and the USA are all individualistic societies. Mattila and Choi [70] showed differences in PPF between the individualistic USA and the culturally collectivist South Korea, and Bolton *et al.* [71] showed differences in PPF between USA and China, which is characterised as collectivist country as well [89]. In conclusion, results show that the influence of degree of social interaction on the buyer's PPF is stable across countries with a western culture.

## 5.2. Limitations and Outlook for Further Research

The methodological approach of this study shall be reflected critically in order to demonstrate existing limitations and provide proposals for future research.

It is important to keep in mind that the data was collected in a purely hypothetical scenario. The participants imagined the PWYW situation and did not pay the indicated price in real life. If they would have had to pay the price they determined for a Big Mac, the participants' price determination could have been different. Additionally, a Big Mac is a product that is purchased and consumed when one is hungry. The indicated PWYW price for a Big Mac as well as the perception of price fairness could vary depending on if someone is craving for food or not. It would be interesting to see if the results of this study align with studies conducted in real life situations. Thus, future research should not just examine PPF in hypothetical settings. Studies in local stores or online experiments, where the buyer actually pays a price and receives a product, could be conceived.

It should also be considered that there might have been different perceptions regarding McDonald's Big Mac between countries. The company McDonalds as a global operating chain or the product Big Mac as a burger may be afflicted with

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<sup>14</sup>The main effect for scenario is already discussed in H<sub>3</sub>.

differing images between countries. Future research should investigate PPF in PWYW using different reference products. Additionally, to examine differences in PPF not only between countries but also between different cultures, research should be expanded to include non-western societies.

Finally, because the results of this study suggest that the mental concept of PPF in PWYW is different from the concept of PPF in OPS, the consequences of PPF in PWYW must be re-examined. It is unsure, if the benefits of PPF, including a positive influence on the customer's intent to purchase [7] [8], a positive influence on customer satisfaction [9] [10], a positive influence on customer loyalty [11], a positive influence on the buyer's attitude towards the seller [12], and perceived quality [13], are still valid within PWYW conditions. Previous research showed that PPF is important for sellers because of such positive effects, whereas perceived price unfairness leads to massive negative consequences. However, both consequences for PPF as well as consequences for perceived price unfairness have to be newly investigated in PWYW due to the buyer's varying mental model of PPF depending on the price building mechanism.

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