Psychological approach to consumer buying decisions: 
Analysis of the psychological purse and psychology of price

SOTOMIHIKO KOJIMA
Department of Management, Aichigakuin University, Nisshin-cho, Aichi-gun 470-01

The effects of psychological purse on buying decisions are discussed in Part I. The concept of psychological purse assumes that the consumer has several kinds of psychological purses. Various experiments were conducted to exhibit the enlargement and reduction of the size of the psychological purse, depending on goods or services to buy, buying motivation, budget, and other conditions. In Part II, various aspects of the issue of price and buying decisions are experimentally discussed. The major topics are: (1) the possibility of applying the Weber ratio and Helson's adaptation level theory to price judgement, and the framing effects and price judgement, (2) with regard to bargains, which has stronger effects on buying behavior, displaying the price difference or price difference ratio? Is psychological pricing really effective? (3) the effects of the presentation order of trade-off information on buying decisions.

Key words: decision making, consumer psychology, psychology of price, psychological purse.

In the field of economic behavior research, as Katona pointed out (1951), the importance of studying psychological factors along with economic approaches has been growing. Studies by Tversky and Kahneman on utility and consumer choice in micro economics (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981; Tversky & Kahneman, 1991) caught wide attention from economic circles.

Over the past 35 years, we have worked on the psychology of consumer and economic psychology. In this article, we will discuss several researches we have done on price, which is an important factor for consumer buying decisions, with experimental psychological approaches.

Also discussed in this article is the concept of the psychological purse. In an attempt to give an overall explanation on seemingly irrational consumer decision making, we proposed the concept of the psychological purse, and have done theoretical, empirical, and experimental researches since 1964 (Kojima, 1964; Kojima & Hama, 1982). The concepts of psychological account and mental accounting proposed by Tversky and Kahneman (1981) and Christensen (1989), respectively, are somewhat similar to the psychological purse, although the psychological purse seems to include wider consumer behavior. These concepts of the psychological purse and mental accounting have close relationships with the psychology of price and buying decisions. We will examine the psychological purse in Part I.

Part I: The Concept of the Psychological Purse and Its Experimental Studies

Examples of the Psychological Purse Shown in Daily Buying Behavior

The value of money is common to all. One hundred dollars allow anybody at anytime to buy goods or services worth $100. However, the satisfaction received from the goods or services and the psychological pain caused by paying that amount of money differs greatly by the individual and by what is bought. For instance, someone might feel great pain in paying $100 at a restaurant, but someone else might not. Generally speaking, people with less income would feel more pain. However, a gourmet might not feel so

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painful even if the income of that person is not large. Or, if it is a wedding anniversary dinner, it might not be so painful. Furthermore, the source of income might affect the amount of pain: If one gets some unexpected income and pays for a meal from that income, $100 might not be so painful.

From an economical viewpoint, generally, a larger expenditure causes greater pain, and a smaller expenditure causes smaller pain. However, there can be reverse cases psychologically. Someone who does not feel pain paying $100 for a meal in a restaurant might feel pain paying $10 for the custody charge for the dog that the person has taken with. Paying $200 for a dress may not be painful, but paying $20 for a taxi from the department store home might be painful. The concept of the psychological purse tries to explain these irrationalities and contradictions in consumer psychologies.

**Types of Psychological Purses**

Economically, a consumer pays money for goods or services he/she has bought from his/her account which is considered one. However, psychologically, a consumer is assumed to have several psychological purses. The psychological pain which accompanies spending money differs from the psychological purse with which a certain thing is paid, and that affects the buying decision. By assessing the degree of psychological pain a consumer feels when he/she pays for goods or services and by analyzing the data with the factorial analysis or the cluster analysis, we will be able to clarify what kind of and how many psychological purses the particular consumer has. Researches by Tanaka and Kitade (1974) and Kojima and Hama (1982) are some examples of such attempts. The type and the number of psychological purses are supposed to match the type and the number of the scales of value judgement required when the consumer buys goods and services.

Kojima and Hama (1982) obtained major psychological purses of Japanese housewives as follows: (1) pocket money, (2) daily necessity, (3) personal fortune, (4) culture and education, (5) eating out, (6) raising the standard of living level, (7) security, (8) a little luxury, (9) feminine articles. Interestingly, expenses for the beauty parlor and year-end gifts to superiors are included in the security psychological purse along with insurance and security guards.

**Classification of the Psychological Purse**

The psychological purse differs by the individual and by goods and services (Table 1).

1) Inter-individual, same goods: A father in his 50's feels silly to pay $50 for a noisy rock concert, but for his young son, it is quite a satisfactory expenditure.

2) Inter-individual, different goods: A husband does not mind expenses for playing golf, and a wife does not feel any pain for expenses for the beauty parlor.

3) Intra-individual, different goods: Paying for a dress at a department store is not painful, but the taxi expense is painful.

4) Intra-individual, same goods: This class is most intriguing. On one hand, it is an issue of enlargement and reduction of a psychological purse by the same consumer and for the same goods, and on the other hand, it exhibits the effects of TPO (time, place, occasion) on buying behavior. For instance, Japanese consumers tend to enlarge their psychological purses while traveling. Another example is that making a decision to buy a $5,000 carpet is difficult in everyday life, but can be easily decided when the same carpet is bought on the occasion of buying a $500,000 house.

**Psychological Pain Measured by Product Category and Price Rank**

The strength of psychological pain differs by the price of goods and services. By combining product category and price rank, we measured the strength of the psychological pain felt by college students under various conditions (Kojima, 1986). At a low price rank of ¥1,000, product categories make a big difference; products in different categories (books, lunch, clothes) affect the strength of the psychological pain differently. At a higher

<table>
<thead>
<tr>
<th>Consumer</th>
<th>Goods</th>
<th>Same</th>
<th>Different</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-individual</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Intra-individual</td>
<td>4</td>
<td>3</td>
<td></td>
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</tbody>
</table>
price rank of ¥5000, however, the amount of price itself affects the strength of the psychological pain, and product category does not make much difference.

Experiments Concerning the Enlargement and Reduction of the Psychological Purse

The increase and decrease of economic account are expected to result in the enlargement and reduction of the psychological purse. Akamatsu (1980) examined this issue by assessing buying motivation for particular products under different conditions. Subjects were white-collar workers living in the Tokyo metropolitan area, and they were divided into seven condition-groups. Conditions were created by instructions to the subjects except with Group 7. The conditions (instructions) and products used to assess buying motivation were as follows:

a) Economic account increase condition-groups

Group 1: Imagine that you won ¥100000 at a horse race, and have just received the money.
Group 2: Imagine that you have won a ¥100000 lottery, and have just received the money.
Group 3: Imagine that you won a ¥1,000,000 lottery, and have just received the money.

b) Economic account decrease condition-groups

Group 4: Imagine that you have just lost ¥100000 at a horse race.
Group 5: Imagine that you bought a ¥100000 suit, and have just paid the money.
Group 6: Imagine that you bought a ¥2000000 house and have just paid the money.
Group 7: People who actually bought a house within six months from the day of the experiment.

Products and two assumed prices
1: Shoes (¥3000 or ¥10000)
2: Dining table set (¥20000 or ¥50000)
3: Camera (¥30000 or ¥100000)
4: Carpet (¥30000 or ¥200000)

The results showed that temporal increase and decrease of economic account introduced by verbal instructions can affect the size of the psychological purse. That is to say: (1) An increased economic account resulted in an enlarged psychological purse. (2) Decrease of economic account reduced the size of a psychological purse in general. However, there are cases when it enlarged a psychological purse. Losing a large amount of money by gambling or buying an expensive house are such cases. In those cases, a kind of contrast effect works, and it makes the subject feel that economizing ¥3000 - ¥30000 is meaningless. (3) Subjects in Group 7, people who actually bought a house, showed the enlarged psychological purse for buying a carpet and a dining table set.

Christensen (1989) also reported that a consumer feels petty over the small expense of an additional thing after buying an expensive thing when compared with buying the same thing alone. This phenomenon can be explained with either contrast effect or the door-to-the-face theory in social psychology; however, we think the psychological purse is more suitable for explaining the phenomenon.

Tversky and Kahneman (1981) asked two groups of subjects if they would make an extra trip of 20-min by car in order to get a discount of $5 for a calculator. Group A was instructed to imagine buying a jacket for $125 and calculator for $15, and Group B buying a jacket for $15 and a calculator for $125. The cost for getting the discount – a 20-min drive – was the same for both groups, and the amount of discount and the discount rate for the inclusive shopping value was the same, but the discount rate for the calculator was much higher for Group A. The results showed that 68% of Group A were willing to drive 20 min, but only 29% of Group B answered that they would. The results indicate that consumers do not consider the inclusive value of shopping, but consider only the discount rate of the product to be discounted.

Based on the experiment of Tversky and Kahneman (1981), Nakayachi (1993) tried to examine how the consumer's budget and the category of the products affect the consumer's evaluation of discount in the case of buying more than one kind of products together. The results of Nakayachi's research agreed with the results of Tversky and Kahneman when the consumer did not have a fixed budget for the inclusive shopping; the consumer evaluated a higher discount rate for
the low-priced product (superficially higher discount) as being more attractive than a lower discount rate for the high-priced product when the amount of discount was the same. This phenomenon was recognized regardless of the category of the products to be bought together (a lipstick and a lip brush, or a lipstick and a mechanical pencil). However, when the consumer had a fixed budget, he/she neglected the superficial higher discount and evaluated the benefit of discount by adding up the price of all products to buy.

Part II: Psychology of Price and Buying Decision

Price is one of the most important factors in economic activities. Yet, most research and theories concerning price have been made from the standpoint of economics, psychological research being scarce, even though price has a crucial effect on consumer buying decisions. In Part II, several psychological experiments concerning buying decisions we have performed in the past will be discussed.

Psychophysics of Price: An Issue of Price Comparison

Studies of price from the viewpoint of psychophysics have been a focus of attention among American psychologists (e.g., Monroe, 1971). We performed the following experiment on the Weber ratio in price judgement (Kojima, 1964). The consumer usually chooses a product made by a first-class manufacturer rather than by a third-class manufacturer if the price is the same. Using the method of limits – one of the psychophysics means of measurement employed for sensory perception experiments – we tried to decide at which point the consumer switches his/her choice from a first-class manufacturer product to a third-class manufacturer product when the price of the first-class manufacturer product is raised.

Prices of the third-class manufacturer products were used as the standard stimuli, and prices of the first-class manufacturer products were the variable stimuli. The price of a first-class manufacturer product was raised, starting from the same price of a third-class manufacturer product, until it reached the point of subjective equality (PSE) where the subject felt the value of both stimuli to be the same. The standard stimuli were ¥10, ¥100, and ¥1000. If Weber’s Law, which exhibits a constant Weber ratio, can be applied to price judgement, then the ratio PSE / standard stimulus will be the same for each of three standard stimuli. However, as shown in Table 2a, when the standard stimulus (the price of the third-class product) became higher, the ratio decreased, showing that the Weber ratio is not constant. The results suggested that price difference affects more strongly than the price difference ratio for price judgement. Another experiment (Kojima, 1964), using a similar method in which prices at an inconveniently located store and a conveniently located store were compared, showed similar results (Table 2b).

Nakatani (1968) analyzed the data of a Nikkei Shimbun survey and found out that brand switching of various kinds of products from the first choice to the second occurred at a constant level of about 20% of the price difference ratio, supporting the application of the Weber ratio to price judgement. However, the price range Nakatani analyzed was from ¥100 to ¥600, much smaller than our experiment. Considering the results from the Nakatani research and ours, we can conclude that Weber’s Law can be applied only to a limited price range in the study of price difference ratios.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Weber ratio applied to price judgement</th>
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<tbody>
<tr>
<td>Price of third-class manufacturer product (standard stimuli)</td>
<td>Price of first-class manufacturer product (PSE)</td>
</tr>
<tr>
<td>¥10</td>
<td>¥23</td>
</tr>
<tr>
<td>¥100</td>
<td>¥153</td>
</tr>
<tr>
<td>¥1000</td>
<td>¥350</td>
</tr>
</tbody>
</table>

b) Weber ratio of the price at an inconveniently located store vs. the price at a conveniently located store

<table>
<thead>
<tr>
<th>Price at inconveniently located store (standard stimuli)</th>
<th>Price at conveniently located store (PSE)</th>
<th>Difference</th>
<th>Weber ratio × 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>¥10</td>
<td>¥16</td>
<td>¥6</td>
<td>100</td>
</tr>
<tr>
<td>¥100</td>
<td>¥118</td>
<td>¥18</td>
<td>107</td>
</tr>
<tr>
<td>¥1000</td>
<td>¥1070</td>
<td>¥70</td>
<td>107</td>
</tr>
</tbody>
</table>
The Effects of Displaying a Price Difference Ratio and a Price Difference for a Bargain

Which has a greater effect on buying decision, a price difference ratio or a price difference? This issue becomes important when displaying for a bargain.

In our research (Kojima, 1986), we randomly presented 10 original prices to housewives from ¥100 to ¥100,000 and the amount of discount or discount rate. Half the subjects were presented the amount of discount (e.g., ¥10 discount from ¥100), and the other half a discount rate (e.g., 10% discount from ¥100). The subjects were asked to evaluate the degree of cheapness on a seven-point scale. Figure 1 shows the results of a 10% discount and the amount of discount which corresponds to a 10% discount. When the original price is lower, the discount rate has bigger effects, but when the original price is over ¥50,000, the amount of discount has big effects. Another experiment (Kojima, 1986) with the same procedure but with a discount rate of 30% and the corresponding amount of discount (i.e., ¥30 discount from ¥100) resulted in the same tendency. However, the difference between displaying discount rate and displaying amount of discount is smaller than the 10% discount case.

Positive Images of a High Price

In general, a lower price is advantageous compared to a higher price for consumer choice. However, this role cannot be applied to every occasion. Sometimes a lower price (not including a low price as the result of a discount) works negatively on the psychology of the consumer. This psychological mechanism stems from the apprehension that cheap equals inferior. Furthermore, sometimes a higher-priced product sells better than a lower-priced product of the same kind. This phenomenon can be explained as the reverse of "cheap equals inferior": High price means high quality. When we asked the subject to give associated adjectives to the stimulus word "quality product," the response word most frequently mentioned was "expensive," next "gorgeous" and then "elegant." When subjects were asked to express their images of cheap and expensive products on the SD method scales, they attributed better images to expensive products in all scales except the "familiar" scale (Figure 2).

The Optimal Price Zone

A high price often works as an obstructive factor to buying behavior. However, as mentioned in the previous section, consumers have little confidence in products thought to be too cheap. We hypothesized that there is an optimal price zone for each product when the consumer chooses the product, and conducted the following experiments.

a) Different optimal zones for different products

In this experiment (Kojima, 1986), college...
students were presented with the prices of several products belonging to different categories, and were asked to answer on a 3-point scale if the price is "too high to buy (+1.0)," "appropriate to buy (0)," or "too cheap to buy (-1.0)." Figure 3 shows the results of a camera and a pair of jeans. The scale on the left vertical axis shows the mean value of the 3-point scale (line graph), and the right vertical axis shows the percentage of the subjects who answered "appropriate to buy" (bar graph). As we had expected, there was an optimal price zone. The optimal price zone for the camera was from ¥ 30,000 to ¥ 60,000.

The results of another experiment (Kojima, 1986), which measured the degree of satisfaction on a 5-point scale (Figure 4), clearly showed that products with a very low price and a very high price give less satisfaction.

b) Differences created by stores at which purchases are made

Even if the same product is bought at the same price, the consumer's degree of satisfaction may differ according to the store at which the purchase is made. Results from the experiment by Akamatsu (1980) are shown in Figure 5. In the case of shoes, satisfaction in product purchase hit the ceiling when the price was high at a department store or a specialty shop, but satisfaction declined sharply when a pair of shoes priced over ¥ 9,800 was bought at a supermarket. In the case of a T-shirt, a conspicuous optimal price zone was marked when it was bought at a specialty shop.

The Types of Store and the Adaptation Level Which Affect Price Judgement

Price judgement and the types of store. In judging the price of a product, the consumer may feel a sense of cheapness for one product or expensiveness for another, and the store where the purchase is made might have a framing effect. Figure 6 shows the results of the experiment con-
Concerning this point (Kojima, 1972). College students were asked to judge the prices of three products (if they feel them to be cheap or expensive) on an 11-point scale under two different conditions of purchase at a department store or a supermarket. The results showed that if the same product was sold at the same price at a department store and a supermarket, subjects judged the supermarket price to be more expensive. Since supermarkets have a strong general image of selling cheap products, the subjects felt the facial cream to be expensive at ¥1,000.

Price judgement and adaptation level. In addition to a store's image, the range of the prices of products which are exhibited to the consumer on the store's shelves has a framing effect which affects price judgement. This is an issue to which we can apply the adaptation level theory by Helson (1964) to price judgement. In an attempt to examine this matter, we conducted the following experiment (Kojima, 1972).

Subjects were randomly assigned to the high-price or the low-price range group and presented a set of prices: ¥1,600, ¥1,400, ¥1,200, ¥1,000, ¥800 for the high-price range group and ¥1,200, ¥1,000, ¥800, ¥600, ¥400 for the low-price range group. The subjects in both groups were then asked to judge the prices of facial cream and hair tonic, both ¥1,000, on an 11-point scale (Figure 7). The high-price group tended to judge these as cheap while the low-price group tended to judge them as expensive, suggesting that the adaptation level effect can be recognized on price judgement.

Psychological Pricing

Consumers are often enticed by the appearance of low prices, i.e., ¥98, instead of ¥100, or ¥998, instead of ¥1,000. The price unit of ¥100

Figure 5. Price and degree of consumer satisfaction shown by the type of stores.

Figure 6. Price judgement and the type of stores.
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or ¥10,000 is called odai in Japanese commerce, and the pricing of goods at ¥98 or ¥9980 is called “breaking odai” or “psychological pricing.” Can psychological pricing really be successful in impressing consumers with bargains?

In order to examine the effects of psychological pricing, we conducted the following experiment (Kojima, 1964). As a preliminary experiment, in order to make sure that a small price difference does not cause a difference in price judgement, a group of housewives (Group A) were presented ¥48,800 for a stereo set and ¥22,700 for a washer, and another group (Group B) ¥49,200 for a stereo set and ¥22,700 for a washer, and were asked if they felt the price expensive or cheap (Table 3). The answers were marked on a 5-point scale. The results confirmed that the price difference presented to the two groups did not cause a significant difference in price judgement.

Following the preliminary experiment, we presented two other groups of housewives different prices for the same products (Table 4), and asked them to judge the prices, using the same procedure in the preliminary experiment. One of the two groups was always presented the “breaking odai” price. As the results show, psychologically priced products were always judged cheaper, vindicating psychological pricing as being effective.

The Effects of the Order of Presentation of Trade-Off Information

When there is a trade-off relationship between quality (or performance) and price for the products which belong in the same category, the order of presentation of trade-off information may affect buying decisions. In order to examine this issue, we conducted the following experiment (Kojima, 1986). Each of two groups of subjects were presented trade-off information in the order of “good but expensive” or “expensive but good,” respectively, and buying motivation was assessed. As shown in Figure 8, the “expensive but good” group exhibited higher buying motivation.

Asch (1946) studied the relationship between the order of information presented and personality image formation, and found that the information presented at first has a stronger effect (primacy effect). He explained the results with the framing effect of the first information. Mizuhara, Takuma, Hidano, and Azuma (1959) also examined the order of information presented and personality perception, and recognized the primacy effect.

The information we used for our experiment consisted of positive information (good quality) and negative information (high price). Therefore, this information is regarded as a trade-off condition, and psychologically, it is an approach-avoidance conflict condition. The fact that the “expensive but good” group showed higher motivation means that it is more effective when positive information is placed last. This result is the reverse of a common notion of American social psychology. There are two assumptions which can explain it. Assumption 1: It is caused by the difference between Japanese and English in use of language. The Japanese language affirms or negates a certain act at the end of a sentence, while the English language does so immediately after the subject of the sentence. Therefore, the Japanese tends to regard the information presented at the latter part of a sentence as being more important.

Assumption 2: The information placed last has a stronger effect only if the entire information is
Psychological approach to consumer buying decisions

Table 3
Small price difference and price judgement

<table>
<thead>
<tr>
<th></th>
<th>Very expensive</th>
<th>Rather expensive</th>
<th>Ordinary</th>
<th>Rather cheap</th>
<th>Very cheap</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>¥48,800</td>
<td>9</td>
<td>41</td>
<td>57</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>¥49,200</td>
<td>10</td>
<td>36</td>
<td>58</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Washer</td>
<td>¥22,300</td>
<td>2</td>
<td>34</td>
<td>76</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>¥22,700</td>
<td>5</td>
<td>32</td>
<td>73</td>
<td>13</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Figures in the cell are number of subjects except for $\chi^2$ value. Figures in the upper part of the cell show Group A, in the lower show Group B.

Table 4
Effects of psychological pricing

<table>
<thead>
<tr>
<th></th>
<th>Very expensive</th>
<th>Rather expensive</th>
<th>Ordinary</th>
<th>Rather cheap</th>
<th>Very cheap</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV set</td>
<td>¥49,800</td>
<td>1</td>
<td>26</td>
<td>84</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>¥50,400</td>
<td>7</td>
<td>39</td>
<td>73</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Electric organ</td>
<td>¥30,200</td>
<td>7</td>
<td>50</td>
<td>57</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>¥29,800</td>
<td>6</td>
<td>27</td>
<td>66</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Fan</td>
<td>¥10,200</td>
<td>8</td>
<td>35</td>
<td>78</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>¥9,800</td>
<td>6</td>
<td>20</td>
<td>53</td>
<td>41</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Figures in the cell are number of subjects except for $\chi^2$ value. Figures in the upper part of the cell show Group A, in the lower show Group B.

trade off (or conflicting); in other cases, the information placed last does not have a stronger effect.

We can verify Assumption 1 by conducting the same sort of experiment in the U.S. Although we have not done that yet, we performed an experiment to test Assumption 2 (Kojima, 1986). Japanese housewives were presented with two kinds of information which are not trade off and are desirable, changing the order of presentation.

Subjects were asked at which store they would like to buy a given product, a store where good products are sold cheaply or a store where cheap and good products are sold. The results showed that more than three quarters of subjects would go to the store where good products are sold cheaply (Figure 9). Good and cheap are two desirable factors in helping the consumer choose a product or a store to shop at. However, the Japanese consumer today seems to attach more importance to good quality, and therefore, presenting such information first is more effective. Furthermore, if low price is presented first, the product might be assumed to be cheap and inferior image. In either

![Figure 8. Order of presentation of trade-off information and buying motivation.](image)

![Figure 9. Order of presentation of desirable information and buying motivation.](image)
case, the primacy effect worked strongly on the results of this experiment.

In summary, we presented in this article a new theory of the psychological purse and some other psychological assumptions concerning consumer buying decisions, assessing them by experiments. The results from the experiments revealed several new and interesting findings.

References


Kojima, S. 1986 The psychology of price. Diamond Co. (In Japanese)


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