IMPACT OF INTRODUCING THE MIDDLE ALTERNATIVE: META-ANALYTIC APPROACH

Radka Kubalová[1]

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Abstract: *This paper explores the impact of adding a compromise alternative into the choice set taking into account the previous findings in the literature. The paper takes a meta-analytical approach when examining the results of previously published peer-reviewed studies which included specific product categories in their study design. The literature selection process generated 69 choice set comparisons across 8 scientific studies including over 14 000 individual observations which allow examining the compromise effect in a broader view.*

Keywords: *Compromise, Consumer, Context Effect, Decision-making.*

1. INTRODUCTION

How consumers make their decisions and what influences their preferences and choices are of main interest for marketing researchers as well as practitioners. In highly competitive markets, it is more than ever important for companies to know what influences consumers' preferences and leads them to buy a specific product. Although for a long time, the decision making process was contained and hidden in the so called 'black box' and it is still not easy to observe and explain how consumers decide, according to Panwar et al. (2019, p. 39) it is at least possible to follow the tendencies and shed light on some processes today. This is being done with the help of psychology, decision making field and modern technologies which allowed development of such fields as neuromarketing.

The previous studies in the field of decision making and consumer behavior represents empirical evidence that consumers do not always choose the product with the maximum utility but their preferences are influenced by the context of the choice set, namely the position and presence of additional alternatives (Thomadsen et al., 2018). The findings in the area of context effects suggest consumers often exhibit an extremeness aversion and are more likely to choose the alternative when it is presented to them as a middle option rather than an extreme option, giving the phenomenon the name compromise effect (Simonson, 1989).

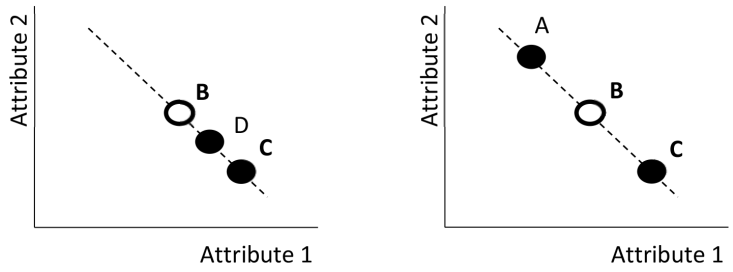

Figure 1. Position of the alternative as extreme (left) and compromise (right)

Source: Simonson & Tversky (1992); own processing

[1] Silesian University in Opava, School of Business Administration in Karvina, Univerzitní náměstí 1934/3, 733 40 Karviná, Czechia

Figure 1 exhibits the relative positions of the alternatives in a choice set to account for the compromise effect where the alternative B is reported to be more popular and have a larger share when it is introduced as the compromise (situation on the right) instead of when it is presented as the extreme option even if its attributes do not change in both conditions.

If a consumer is choosing between two extreme product alternatives of which each is superior in a different attribute, then the consumer has to make a trade-off between the attributes and sacrifice one of the attributes to gain more of the other attribute (e.g. give up higher quality to buy a cheaper product). However, according to Sheng, Parker and Nakamoto (2005), the presence of a third compromise alternative in the choice set simplifies this difficult trade-off decision making as the compromise appears to be the safest choice.

Since the compromise effect was firstly observed by Simonson (1989), it was then explored in relation to different experimental conditions and different samples. Moreover, the studies mostly focus on testing the statistical significance but rarely report the effect sizes. It can be assumed the individual studies also differ in the reported impact of introducing the alternative as a middle option on the consumers' product choice. Thus, this paper aims to explore the impact of adding a compromise alternative into the choice set taking into account the previous findings. Using the meta-analytical approach, the standardized effect size of introducing a middle alternative is computed and compared across the studies and the importance of the compromise effect impact is discussed. The findings are used to draw implications for the businesses that can use contextual effects, including compromise effect when designing the product lines or promotional offers.

2. RESEARCH METHODS AND DATA SELECTION

To meet the aim of the paper, the secondary data about consumers' decision making were collected from the literature to be used to conclude the effect of introducing the compromise alternative. In the following sections, the process of the article selection and analysis is described. The number of articles in each of the phases is shown in Figure 2.

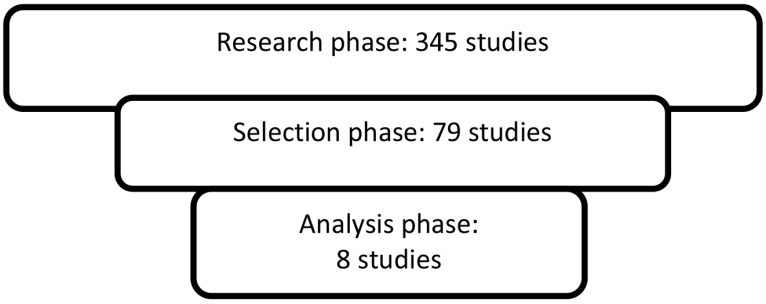

Figure 2. Number of studies for each phase
Source: own processing

The online databases ScienceDirect, EBSCO and Google Scholar represented the main sources of the bibliographic research. The studies were searched using the key term 'compromise effect' in title, abstract or keywords with the focus on the social sciences, especially decision making field, economics or marketing. The studies included 'compromise effect' but their topical meaning was different than the one in the interest of current research that was omitted from further reading with 79 studies making it to the selection phase.

During the selection phase, several duplicates were removed (8) and the remaining studies were examined closely to meet the criteria of the analysis. For the analysis, only the studies which involved own empirical research were included, omitting literature reviews, theoretical studies, dissertation, master and bachelor theses. Most importantly, only the studies which involved controlled experiments with two experimental conditions (comparing the choice shares of the middle alternative in 2 item and 3 item sets, respectively) were included, therefore excluding such studies or observations that compared the choice shares of middle alternative in 3 item sets but under two different experimental conditions. Lastly, the studies that presented in the results only the choice shares without the complete information about the sample sizes of the experimental and control condition were excluded as well.

This resulted in 8 final studies that were analyzed without aggregating the data per study. The data aggregation per study was avoided as there can exist differences in the decision making based on the product type, attributes type and their values and the aggregation would diminish these differences. Hence, the units of analysis are the choice scenarios of the studies reported in the relevant articles — an approach common for meta-analyses as stated by Chernev Böckenholt and Goodman (2015, p. 340).

As each of the studies included more than one choice scenarios (e.g. for different products) then a study may have one, a portion of, or all of its choice sets included in the analysis depending on meeting the following criteria: presence of attribute ratings, choice shares of 2 item vs. 3 item set, and number of observations for each option in each treatment condition.

Therefore, the results per choice scenarios were examined which led to obtaining a total of 69 distinct scenarios with more than 14 000 individual observations which are more than would be feasible and obtainable in a single study experiment. The final studies involved and the corresponding choice scenarios ID, minimum and maximum sample sizes in the study and product categories are shown in Table 1.

Table 1. Characteristics of the studies

Study	Choice scenario ID	Sample sizes	Product categories
Gui, Kim and Kim (2020)	1-10	94-106	Hotel
Kim, Spence and Marshall (2018)	11-18	72-84	Computer, Chocolate
Kim (2017)	19-28	67-105	Vacation Spots, Chocolate
Wu, Huang and Wang (2015)	29-30	227- 234	Massage Chair
Müller, Kroll and Vogt (2012)	31-38	63-233	Toothpaste, Shampoo
Kivetz, Netzer and Srinivasan (2004)	39-54	226-420	Portable PC, Speakers
Dhar, Nowlis and Sherman (2000)	55-60	250	Binoculars, Computer, Tires
Simonson and Tversky (1992)	61-69	121-250	Camera, Calculator, Portable Grill

Source: own processing

From these studies, the data about consumers' choices were then extracted and processed. The extracted information were the numbers of respondents choosing the alternative when it was presented as the middle/compromise alternative, the numbers of respondents choosing the very

same alternative when it was not presented as middle/compromise alternative in the choice set and also, the sample sizes for both conditions.

To quantify the standardized effects and the common (global) effect of compromise alternative on the choices for the included choice scenarios, odds ratio (OR) was used due to the dichotomous nature of the variables (alternative either being or not being chosen). In this context, OR higher than 1 is associated with a higher odds of alternative being chosen when it is presented as a compromise, whereas OR lower than 1 is associated with a higher odds of alternative being chosen when it is NOT presented as a compromise. The OR was calculated by dividing the odds of the first group by the odds in the second group using the following formula:

$$OR_i = \frac{a_i d_i}{b_i c_i} \tag{1}$$

To combine results of the individual scenarios inverse-variance method was used to pool log odds ratio for binary data. The individual effect sizes are weighted according to the reciprocal of their variance (Deeks & Higgins, 2010).

3. RESULTS

As the goal of the analysis is to quantify the common effect for all the observations included, firstly the heterogeneity of the cases was tested and measured ($p < 0.00001$; $I^2 = 93\%$) which indicates considerable heterogeneity between the scenarios. Therefore, the variability in the effect estimates is due to heterogeneity (methodical diversity) rather than sampling error (chance). The presence of heterogeneity led to use of the random effects model instead of the fixed effect model.

The results for all 69 choice scenarios are captured in Figure 3. The first column corresponds with the choice scenario ID. The events represent the number of observations of participants choosing the alternative in compromise and non-compromise condition and the total size of the observation in the condition. Next, there are the weights and ORs of the individual choice scenarios with 95% confidence interval. The right side of the figure then shows the forest plot which visualizes the individual effect sizes for every choice scenario as well as the overall, common effect size represented by the black diamond by the bottom of the forest plot.

It can be noticed that in the majority of the cases the introduction of the alternative as the compromise led to the raise of its relative share (OR > 1). While some of the individual cases do not provide evidence of the compromise effect leading to raise in the alternative share, the results show the common (global) OR is 1.53 (1.17; 2.00) which means that overall, there is an association between the preference of the alternative and its positioning as a compromise. Specifically, the odds of an alternative being chosen when it is presented as the compromise alternative is 1.53 times of the cases of it being chosen when it is not presented as the compromise. Therefore, the analyzed cases present evidence that the alternative brings higher odds of it being chosen by the consumers when it is introduced as the compromise option. However, the effect can be considered very small or practically insignificant, as Ferguson (2009) claims that OR of 2 is the "recommended minimum effect size representing a "practically" significant effect for social science data."

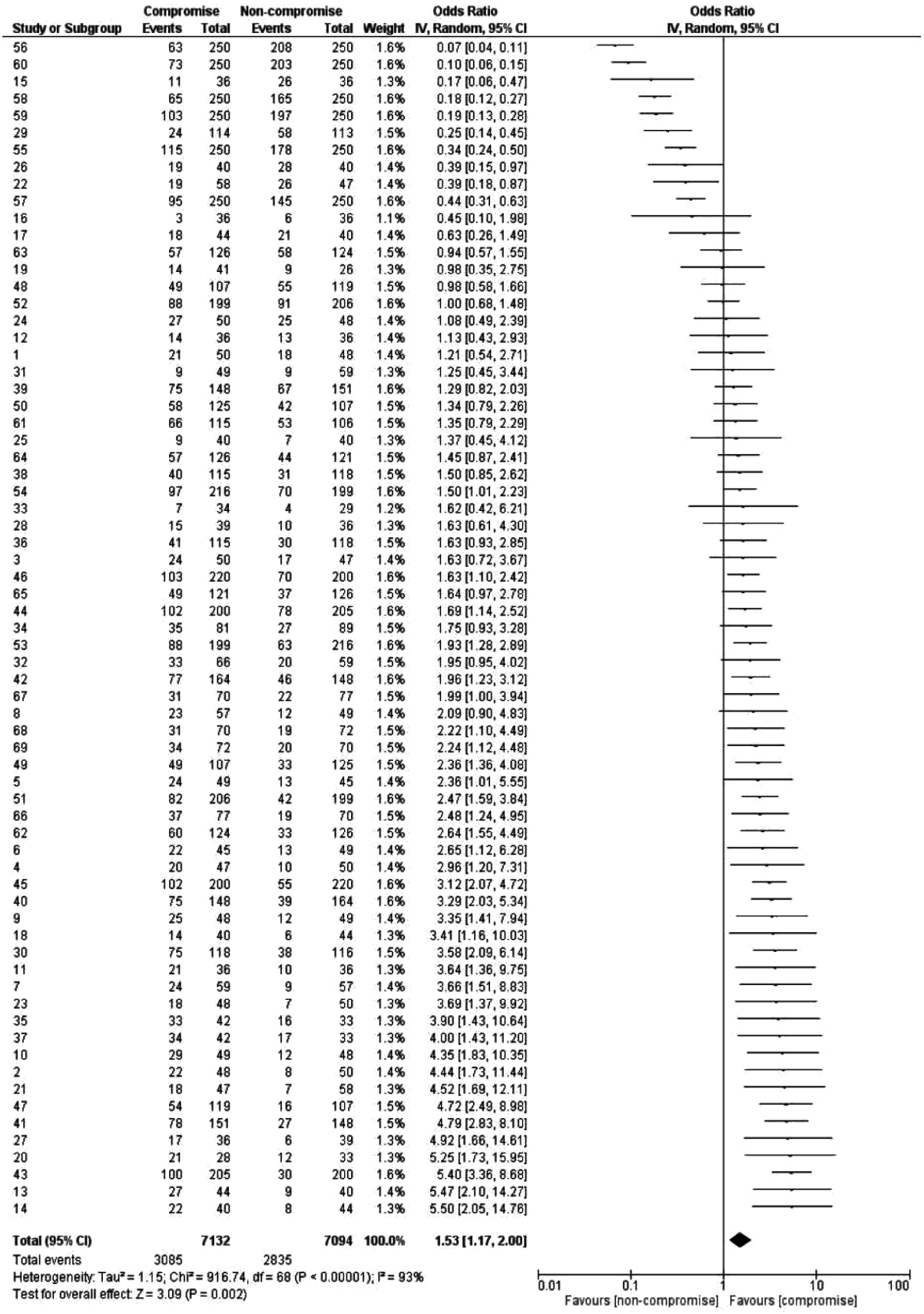

Figure 3. Comparison of choice shares under compromise and non-compromise condition

Source: own processing

4. FUTURE RESEARCH DIRECTIONS

As the current study does not examine the moderators and factors leading to the different effect sizes between the scenarios, future research could focus on estimating the impact of the independent variables on the effect sizes, such as the various experimental design features.

5. CONCLUSION

The results of individual studies that focus on the compromise effect often differ in the experimental conditions as well as in the size of the samples used, as well as the reported results. Moreover, most of the studies tests statistical significance between the choice shares under compromise and non-compromise conditions without computing the standardized effect sizes. To compare and measure the differences in the results between the studies and choice scenarios, meta-analytical approach was taken to estimate standardized effect sizes using odds ratio and the common effect size as this approach allows to draw conclusions based on the larger number of the observations which would be near impossible to obtain in a single study experiment.

The results imply there exists an overall association between the shares of the alternative and whether it is introduced as the compromise option in the choice set. It can be therefore concluded that presenting the alternative as a compromise raises the shares of the said alternative. However, when it comes to the interpretation of the effect size, the discovered effect size is very small and its practical significance is according to some authors questionable. To conclude practical implications, it is important to consider the costs of introducing the compromise alternative in the choice set as the businesses that design their product or promotional offers for relatively low costs should keep in mind that designing the offers in a way that includes the compromise alternative might indeed raise the preference for that product alternative.

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REFERENCES

Chernev, A., Böckenholt, U., & Goodman, J. (2015). Choice Overload: A Conceptual Review and Meta-Analysis. *Journal of Consumer Psychology*, *25*(2): Pages 333–358. https://doi.org/10.1016/j.jcps.2014.08.002

Deeks, J. J., Higgins, J. P. T., (2010). Statistical algorithms in Review Manager 5. Available at: https://training.cochrane.org/handbook/statistical-methods-revman5

Dhar, R., Nowlis, S. M., & Sherman, S. J. (2000). Trying Hard or Hardly Trying: An Analysis of Context Effects in Choice. *Journal of Consumer Psychology*, *9*(4), 189-200. https://doi.org/10.1207/S15327663JCP0904_1

Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, *40*(5), 532-538. https://doi.org/10.1037/a0015808

Gui, Y., Kim, S., & Kim, J. (In Press). Impact of preciseness of price presentation on the magnitude of compromise and decoy effects. *Journal of Business Research*.

Wu, P. H., Huang, M. C., & Wang, Y. S. (2015). Price Range Effect on Extremeness Aversion and Compromise Effect. *Universal Journal of Psychology*, *3*(5), 137-141. https://doi.org/10.13189/ujp.2015.030501

Kim, J. (2017). The influence of graphical versus numerical information representation modes on the compromise effect. *Marketing Letters*, *28*(3), 397-409. https://doi.org/10.1007/s11002-017-9419-4

Kim, J., Spence, M. T., & Marshall, R. (2018). The Color of Choice: The Influence of Presenting Product Information in Color on the Compromise Effect. *Journal of Retailing*, Elsevier, *94*(2), 167-185. https://doi.org/10.1016/j.jretai.2018.01.002

Kivetz, R., Netzer, O., & Srinivasan, V. (2004). Alternative Models for Capturing the Compromise Effect. *Journal of Marketing Research, 41*(3), 237-257. https://doi.org/10.1509/jmkr.41.3.237.35990

Müller, H., Vogt, B. & Eike B. Kroll, E. B. (2012). To Be or Not to Be Price Conscious—a Segment-Based Analysis of Compromise Effects in Market-Like Framings. *Psychology & Marketing*, *29*(2), 107-116. https://doi.org/10.1002/mar.20508

Panwar, D., Anand, S., Farmaan Ali, F., & Kanika Singal, K. (2019). Consumer Decision Making Process Models and their Applications to Market Strategy. *International Management Review, 15*(1), 36-44.

Sheng, S., Parker, A. M., & Nakamoto, K. (2005). Understanding the Mechanism and Determinants of Compromise Effects. *Psychology & Marketing, 22*(7), 591–609. https://doi.org/10.1002/mar.20075

Simonson, I. (1989). Choice Based on Reasons: The Case of Attraction and Compromise Effects. *Journal of Consumer Research, 16*(2), 158-174. https://doi.org/10.1086/209205

Simonson, I., & Tversky, A. (1992). Choice in Context: Tradeoff Contrast and Extremeness Aversion. *Journal of Marketing Research, 29*(3), 281-295. https://doi.org/10.2307/3172740

Thomadsen, R., Rooderkerk, R. P., Amir, O., Arora, N., Bollinger, B., Hansen, K., John, L., Liu, W., Sela, A., Singh, V., Sudhir, K. & Wood, W. (2018). How Context Affects Choice. *Customer Needs and Solutions, 5*, 3–14. https://doi.org/10.1007/s40547-017-0084-9