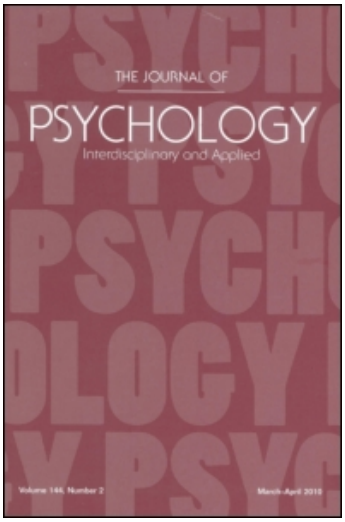
This article was downloaded by: *[Institute of Psychology, CAS]*
On: *12 January 2011*
Access details: *Access Details: [subscription number 907958941]*
Publisher *Routledge*
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



The Journal of Psychology
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t914957657

Reexamining the Role of the Description of Problem Texts in the Disjunction Effect

Yan Sun[a]; Shu Li[b]; Yan-Mei Li[b]
[a] Chinese Academy of Sciences, University of Trento, [b] Chinese Academy of Sciences,

Online publication date: 07 August 2010

To cite this Article Sun, Yan , Li, Shu and Li, Yan-Mei(2008) 'Reexamining the Role of the Description of Problem Texts in the Disjunction Effect', The Journal of Psychology, 142: 3, 261 — 266
To link to this Article: DOI: 10.3200/JRLP.142.3.261-266
URL: http://dx.doi.org/10.3200/JRLP.142.3.261-266

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

The Journal of Psychology, 2008, *142*(3), 261–265
Copyright © 2008 Heldref Publications

Reexamining the Role of the Description of Problem Texts in the Disjunction Effect

YAN SUN
Chinese Academy of Sciences
University of Trento

SHU LI
YAN-MEI LI
Chinese Academy of Sciences

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

ABSTRACT**.** M. Bagassi and L. Macchi (2006) demonstrated that through a pragmatic analysis and consequent reformulation of a task, the certainty vs. uncertainty condition is not a crucial factor to the disjunction effect. In addition, C. Lambdin and C. Burdsal (2007) argued that, given the defining characteristics of a disjunction effect, a between-subjects design does not allow for the conditions necessary for a disjunction effect to occur. In the present study, the authors reexamined the role of text's description in the disjunction effect using a within-subject experimental design rather than a between-subjects design across 3 conditions. The results support M. Bagassi and L. Macchi's conclusion, regardless of whether the information presentation was transparent or not.

Keywords: disjunction effect, gambling, sure-thing principle

THE *DISJUNCTION EFFECT* (Tversky & Shafir, 1992) occurs when one will do X if A occurs and will do X if A does not occur, yet will not do X when the outcome of A is unknown. This form of incoherence violates Savage's (1954) *sure-thing principle* (STP), which is one of the basic axioms of the normative theory of decision making and states that if X is preferred to Y knowing that event A occurred, and X is preferred to Y knowing that A did not occur, then X should also be preferred to Y when it is not known whether A occurred.

Researchers have reported the disjunction effect in a variety of situations, including in the prisoners' dilemma (Croson, 1999; Shafir & Tversky, 1992), two-step gambles (Lambdin & Burdsal, 2007; Tversky & Shafir, 1992), and

This research was supported by the Hundred Talents Program of the Chinese Academy of Sciences and by a grant from the National Natural Science Foundation of China (No. 70671099) to the second author.

Address correspondence to Shu Li, Center for Social & Economic Behavior, Institute of Psychology, Chinese Academy of Sciences, Beijing, China; lishu@psych.ac.cn (e-mail).

the vacation problem (Tversky & Shafir). However, Kühberger, Komunska, and Perner (2001) failed to detect the effect in both purely hypothetical and real-life gambles. Through a pragmatic analysis of the task and a consequent reformulation of it, Bagassi and Macchi (2006) further demonstrated that the disjunction effect did not depend on the presence of uncertainty. That is, changing the description of problem texts and maintaining the uncertainty condition causes the disjunction effect to disappear and participants to appear coherent in their choices. This result is important because it means that (a) the certainty versus uncertainty condition is not a crucial factor for the disjunction effect and (b) there is room for doubt about the reliability of the disjunction effect.

In addition, Lambdin and Burdsal (2007) argued that, given the defining characteristics of a disjunction effect, a between-subjects design does not allow for the conditions necessary for a disjunction effect to occur. The same person should be asked about the three kinds of conditions: the condition that A occurs, the condition that A does not occur, and the condition that the outcome of A is unknown. Thus, it does not make sense for researchers to claim that anyone violated STP in a between-subjects design. It is unfortunate that Bagassi and Macchi (2006) used a between-subjects design in concluding that the disjunction effect depends on the clues of the texts.

Our intention in the present study was to reexamine the role of the description of problem texts in the disjunction effect using a within-subject experimental design rather than a between-subjects design across the three conditions.

EXPERIMENT 1

Method

Participants

The participants in Experiment 1 were 200 (129 men, 71 women) undergraduate students from Qingdao Technological University in Shandong, China. The mean age of the participants was 19.39 years (*SD* = 1.15 years).

Procedure

A two-step gamble problem used by Tversky and Shafir (1992) was presented in questionnaire form in two versions (i.e., original version and simple version). Each version presented the won, lost, and unknown outcomes as separate questions, making for a total of three questions. The order of presentation of the three questions was randomized, and differed on different questionnaires. The original version of the two-step gamble problem was as follows:

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

Imagine that you have just played a game of chance that gave you a 50% chance to win ¥200 and a 50% chance to lose ¥100. The coin was tossed and you [have won ¥200 / have lost ¥100 / will not know whether you have won ¥200 or lost ¥100 until you make your decision concerning a second, identical gamble]. You are now offered a second identical gamble. Would you:

- Accept the second gamble
- Reject the second gamble

In line with Bagassi and Macchi's (2006) manipulation, the simple version was the same as the original version except that we did not include the underlined text in the unknown condition. Each of approximately half of the participants was randomly assigned to respond to either of the two versions.

Results and Discussion

According to Lambdin and Burdsal (2007), only those individuals who made the same decision in both won and lost outcomes are relevant. This is because if a participant accepted the second bet in the won outcome but rejected it in the lost outcome (or vice versa), we cannot know whether this subject would violate STP or not. The data collected in Experiment 1 showed that nobody rejected the second bet in both won and lost outcomes, so we discuss only the 70 participants (33 original version, 37 simple version) who accepted the second bet in both won and lost outcomes. In the original version, of the 33 relevant participants, 17 did not violate STP (i.e., accepted in all three outcomes), and 16 did violate STP (i.e., accepted in the won and lost outcomes, but not in the unknown outcome). We conducted a binomial test ($p > .05$) and a chi-square test, $\chi^2(1, N = 33) = .03$, $p > .05$, which supported the conclusion that chance alone determined whether participants adhered to or violated STP. According to Lambdin and Burdsal, if the number of participants who adhere to STP is well within what would be expected because of chance alone, then it cannot be claimed that STP is obvious and, therefore, STP is violated as a normative principle. Thus, regarding the original version of the questionnaire a disjunction effect occurred. In the simple version of the questionnaire, of the 37 relevant participants, 25 did not violate STP, and 12 did. STP was adhered to as a normative principle, binomial test $p < .05$, $\chi^2(1, N = 37) = 4.568$, $p < .05$, thus the disjunction effect was not found.

EXPERIMENT 2

It is possible that we did not find the disjunction effect because of transparency (i.e., all three outcomes were presented to the same person simultaneously). According to the transparency hypothesis (Tversky & Kahneman, 1986; Tversky & Shafir, 1992), STP tends to hold when its application is transparent, though some researchers (e.g., Bonini, Tentori, & Rumiati, 2004; Li, 1994; Li & Adams,

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

1995) have argued that this is not true. We designed Experiment 2 to examine the role of transparency in the disjunction effect.

Method

Participants

The participants in Experiment 2 were 123 (83 men, 40 women) undergraduate students (59 assigned to the original version, 64 assigned to the simple version) from the same university. The mean age of the participants was 19.51 years (SD = 1.19 years).

Procedure

Participants were first presented with the won outcome of the two-step gamble problem, 1 week later were presented with the lost outcome, and, 8 days after that, were presented with the unknown outcome. We embedded these problems among several other questions so that the logical relation among the three outcomes would not be transparent.

Results and Discussion

The resulting data showed that nobody rejected the second bet in both won and lost outcomes, so we discuss only the 50 participants (19 original version, 31 simple version) who accepted the second bet in both won and lost outcomes. In the original version, of the 19 relevant subjects, 9 did not violate STP and 10 did. Thus, STP was violated as a normative principal, binomial test $p > .05$; $\chi^2(1, N = 19) = .053$, $p > .05$, and the disjunction effect was found. In the simple version, of the 31 relevant subjects, 22 did not violate STP and 9 did. Thus, participants generally adhered to STP, binomial test $p < .05$; $\chi^2(1, N = 31) = 5.452$, $p < .05$, and the disjunction effect was not found.

GENERAL DISCUSSION

Tversky and Shafir (1992) attributed the phenomenon of the disjunction effect to a lack of clear reasons for accepting an option when participants are under uncertainty. However, the present findings, which we obtained by applying a within-subject design, support Bagassi and Macchi's (2006) conclusion that the disjunction effect depends not on the presence of uncertainty, but on the description of problem texts. This is true regardless of whether the information presentation was transparent or not. The fact that the disjunction effect was not intrinsically connected with the uncertainty condition led us to doubt that a lack of clear reasons was responsible for the alleged violations in disjunctive

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

conditions. In comparison with the hypothesis focusing on a lack of clear reasons, we found the hypothesis centered on the description of problem texts to be more likely to fit the data gathered in disjunctive conditions in investigating STP.

AUTHOR NOTES

Yan Sun is a PhD candidate at the Institute of Psychology, Chinese Academy of Sciences. His current research focuses on decision-making bias in choice. He is also interested in risky and intertemporal decisions. **Shu Li** is a professor at the Center for Social & Economic Behavior, Institute of Psychology, Chinese Academy of Sciences. His research interests are in the area of behavioral decision making. **Yan-Mei Li** is an associate professor at the Center for Social & Economic Behavior, Institute of Psychology, Chinese Academy of Sciences. Her research interests are in the area of social psychology.

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

REFERENCES

Bagassi, M., & Macchi, L. (2006). Pragmatic approach to decision making under uncertainty: The case of the disjunction effect. *Thinking and Reasoning, 12,* 329–350.

Bonini, N., Tentori, K., & Rumiati, R. (2004). Contingent application of the cancellation editing operation: The role of semantic relatedness between risky outcomes. *Journal of Behavioral Decision Making, 17,* 139–152.

Croson, R. A. (1999). The disjunction effect and reason-based choice in games. *Organizational Behavior and Human Decision Processes, 80,* 118–133.

Kühberger, A., Komunska, D., & Perner, J. (2001). The disjunction effect: Does it exist for two-step gambles? *Organizational Behavior and Human Decision Processes, 85,* 250–264.

Lambdin, C., & Burdsal, C. (2007). The disjunction effect reexamined: Relevant methodological issues and the fallacy of unspecified percentage comparisons. *Organizational Behavior and Human Decision Processes, 103,* 268–276.

Li, S. (1994). What is the role of transparency in cancellation? *Organizational Behavior and Human Decision Processes, 60,* 353–366.

Li, S., & Adams, A. S. (1995). Is there something more important behind framing? *Organizational Behavior and Human Decision Processes, 62,* 216–219.

Savage, L. J. (1954). *The foundations of statistics.* New York: Wiley.

Shafir, E., & Tversky, A. (1992). Thinking through uncertainty: Nonconsequential reasoning and choice. *Cognitive Psychology, 24,* 449–474.

Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business, 59,* S251–S278.

Tversky, A., & Shafir, E. (1992). The disjunction effect in choice under uncertainty. *Psychological Science, 3,* 305–309.

Original manuscript received March 21, 2007
Final version accepted July 12, 2007

Downloaded By: [Institute of Psychology, CAS] At: 08:11 12 January 2011

Psychology

Heldref psychology journals include articles on new theories, critiques of old ones, and studies based on experimental, empirical, or field investigations. Internationally respected editors and advisers maintain high standards for the content of each journal. Whether your interest is in the behavioral, social, developmental, or experimental field, Heldref has a psychology publication you won't want to miss.

The Journal of General Psychology
Quarterly
Individual: $180 online only, $189 print and online
Institutional: $219 online only, $219 print only, $264 print and online
(Add $14 for postage outside the U.S.)

The Journal of Genetic Psychology
Quarterly
Individual: $180 online only, $189 print and online
Institutional: $219 online only, $219 print only, $264 print and online
(Add $14 for postage outside the U.S.)

The Journal of Psychology: Interdisciplinary and Applied
Bimonthly
Individual: $207 online only, $217 print and online
Institutional: $251 online only, $251 print only, $301 print and online

The Journal of Social Psychology
Bimonthly
Individual: $207 online only, $217 print and online
Institutional: $251 online only, $251 print only, $301 print and online
(Add $16 for postage outside the U.S.)

To place an order,
please copy this form and mail or fax; visit our Web site at **www.heldref.org** or call customer service at **(866) 802-7059.**

Heldref Publications
Subscription Office Address:
PO Box 830350, Birmingham, AL 35283-0350
Toll Free Number: (866) 802-7059 • Fax Number: (205) 995-1588
Phone Number for outside of the US and Canada: (205) 995-1567
Email address: heldref@subscriptionoffice.com

PUBLICATION #1 COST

PUBLICATION #2 COST

Please include appropriate international shipping costs. TOTAL COST

ACCOUNT # (MasterCard/VISA) SECURITY CODE EXP. DATE

SIGNATURE

NAME/INSTITUTION

ADDRESS

CITY/STATE/ZIP COUNTRY

heldref PUBLICATIONS
www.heldref.org
Heldref Publications is a division of the nonprofit Helen Dwight Reid Educational Foundation

SUB08