## Integrating Purchase and Quantity Decisions Increases Sales by Providing Closure Kristen Duke and On Amir Rady School of Management, University of California, San Diego

People often decide not only whether, but also what quantity, to purchase. This decision process can be framed as having one or two stages:





We propose that the notion of purchasing offers greater cognitive closure, and is thus more appealing, when accompanied by a quantity (e.g., choosing to "buy 1" vs. choosing to "buy"). Therefore, **individuals facing a quantity-integrated process** (simultaneously choosing whether and how much to buy) **will be more likely to purchase** than those facing a two-stage process (first choosing whether or not to buy, then choosing quantity). Further, this effect should be larger when cognitive closure matters more; that is, when: (a) individuals have a greater need for cognitive closure, or (b) the product offer is less attractive.

## **Study 1: Consequential Choice**

**2 conditions (two-stage vs. quantity-integrated).** Participants (N = 261) received \$2 and could purchase raffle tickets (25¢ each) toward winning a \$200 Amazon gift card. All participants were asked to "Place a  $\checkmark$  next to your choice." The choice options were:

Two-Stage	<b>Quantity-Int</b>	egrated
Yes: I would like to purchase some tickets	<b>0</b> tickets <b>1</b> ticket	<b>5</b> tickets <b>6</b> tickets
No: I would not like to purchase any tickets	<b>2</b> tickets	<b>7</b> tickets
Those responding "Yes" then indicated the quantity.	<b>3</b> tickets <b>4</b> tickets	<b>8</b> tickets

#### Results



Quantity-integrated  $\rightarrow$  more likely to purchase (p = .001); this led to a 38% increase in total \$ sales

(Conditional on purchase, participants purchased similar numbers of tickets (p = .80). We also find no effect on purchase quantity given purchase in the remaining studies.)

## Study 2: Specifying and Varying Max Quantity

**2 (two-stage vs. quantity-integrated) X 4 (maximum quantity: 1, 3, 5, or 10) design.** Participants (*N* = 800) imagined ordering pizza online and encountering a pop-up advertising a sale on Coke. They could buy up to 1, 3, 5, or 10 bottles. The questions and choice options were:

#### Two-Stage

Would you like to buy? Yes / No

Those responding "Yes" then indicated the quantity.

#### **Quantity-Integrated**

*How many would you like to buy?* 0 / 1 (or, 0 / 1 / 2 / 3 ...etc.)

#### Results



Quantity-integrated → more likely to buy (p < .001), even when the maximum quantity is 1 (where "Buy" [in TS] and "Buy 1" [in QI] are logically equivalent)

## Study 3: It's Not Merely a Phrasing Effect

3 conditions (two-stage vs. quantity-integrated 1 vs. quantity-integrated 2). Participants (N = 300) imagined encountering a sale on gum for \$0.99 a pack and could buy up to 3 packs. All answered, "Please indicate what you would do in this situation." The choice options were:

Results

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## Study 4: The Role of Cognitive Closure

	Two-S	Stage	
	Not buy any	Buy	
7	Those res	ponding '	"buy" then

indicated the quantity.

## **Quantity-Integrated 1**

Not buy	Buy 1	Buy 2	Buy 3	Buy 4	В
any	pack	packs	packs	packs	р

<b>Quantity-Integrated 2</b>

Buy 0Buy 1Buy 2Buy 3Buy 4Buy 5packpackspackspackspackspacks



Quantity-integrated  $\rightarrow$  more likely to buy (p's < .001), even when the questions are identical and the non-purchasing options are identical ("not buy any"). **2 conditions (two-stage vs. quantity-integrated).** Participants (*N* =800) imagined ordering pizza online and encountering a pop-up advertising a sale on Coke. They could buy up to 3 bottles. All answered, "Please indicate what you would do in this situation." (Choice options = same as Study 3). Later, we measured Need for Cognitive Closure.<sup>1</sup>

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#### Results

Interaction:  $\beta$  = -.29, *SE* = .14, *z* = -2.17, *p* = .03 Johnson-Neyman point = 3.84 out of 6 (60% of p's)

Quantity-integrated  $\rightarrow$  more likely to buy, unless the individual has a low tendency to seek closure.

> <sup>1</sup> Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *JPSP*, *67*(6), 1049–62.

## Pooled Analysis of All Studies and Experimental Conditions (45 conditions; N = 13,187)

Products: raffle tickets, Coke bottles, candles, laptop RAM, razor blades, bar soaps, pens, liquid hand soaps, Ferrero Rocher chocolates, packs of gum, certificates of deposit.

#### **Binary Logistic Regressions Predicting Purchase**

	(1)	(2)	(3)	(4)	(5)	(6)
Decision Process (TS vs. QI)	<b>35</b> *** (.019)	<b>37</b> *** (.021)	<b>31</b> *** (.025)	<b>31</b> *** (.026)	<b>32</b> *** (.027)	<b>35</b> *** (.019)
Mentioned Max Quantity (Yes vs. No)		.02 (.091)	.02 (.092)	.02 (.092)	.02 (.092)	
Same Question (Same vs. Different)			<b>23</b> * (.116)	<b>.46</b> *** (.118)	.13 (.179)	
Maximum Quantity (# Value)				<b>.69</b> *** (.069)	.11 (.196)	
Product Price (log-\$)					<b>-2.26</b> ** (.715)	
Average Purchase Rate						<b>4.43</b> *** (.225)
Decision Process x Mentioned Max Quantity		.04† (.021)	.001 (.022)	.002 (.024)	.02 (.025)	
Decision Process x Same Question			<b>.10</b> *** (.023)	<b>.10</b> *** (.023)	<b>.08</b> ** (.026)	
Decision Process x Maximum Quantity				.001 (.012)	01 (.013)	
Decision Process x Product Price					<b>03</b> * (.012)	
Decision Process x Average Purchase Rate						<mark>.25</mark> * (.121)
Constant	<b>31</b> *** (.092)	<b>33</b> *** (.129)	<b>56</b> ** (.217)	.08 (.217)	<b>9.56</b> ** (2.97)	<b>0.14</b> * (.069)
# Observations	13,187	13,187	13,187	13,187	13,187	13,187
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Study Fixed Effects	Yes	Yes	Yes	Yes	Yes	No
AIC	16365	16363	16346	16348	16345	16302

The effect of decision process is largest for the product offers that are the least attractive.

Experimental Conditions: choose for self vs. other, there was vs. wasn't an option to defer, p's were or were not primed with high (or low) commitment before choosing, product ownership was short vs. long, p's were or were not under time pressure.

Standard errors in parentheses. Binary variables are effects-coded (i.e., 1, -1) and continuous variables are mean-centered to allow for meaningful interpretation of the main effects.  $^{+}p < .10$ ;  $^{*}p < .05$ ;  $^{**}p < .01$ ;  $^{***}p < .001$ 



### Conclusion

Simultaneously deciding whether to purchase and the quantity to purchase increases the likelihood of purchase. In our studies, integrating purchase and quantity decisions led to a **29% average increase in overall sales volume.** The effect was largest for the product offers that were the least inherently attractive (i.e., those that naturally attract the lowest sales). We attribute these effects to the closure associated with purchase. Future research may test if these effects apply more broadly to a variety of decisions that involve both opt-in and quantity decisions (e.g., retirement savings, stock investments, donating to charity).

Questions? Comments?

#### Email: Kristen.Duke@ rady.ucsd.edu