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RESEARCH ARTICLE

WHEN FILLING THE WAIT MAKES IT FEEL LONGER: A PARADIGM SHIFT PERSPECTIVE FOR MANAGING ONLINE DELAY

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Appendix A

Screenshots of Online Waiting Pages

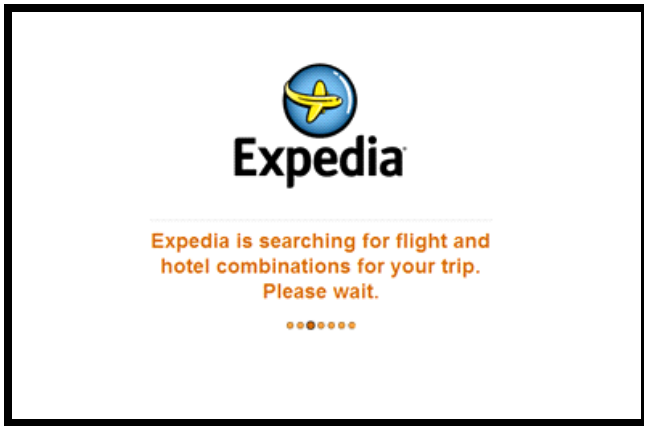

Figure A1. Expedia.com

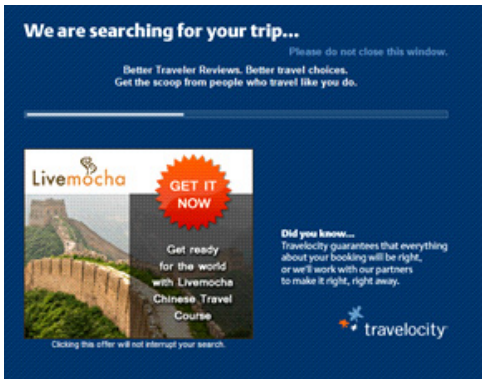

Figure A2. Travelocity.com

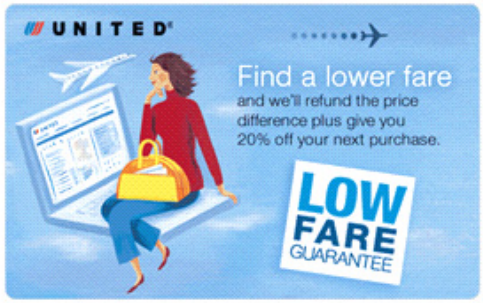

Figure A3. United.com

Figure A4. Alaskaair.com

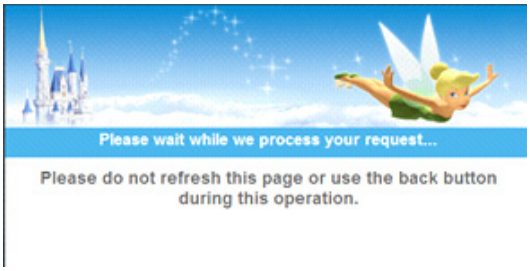

Figure A5. Disneyland.com

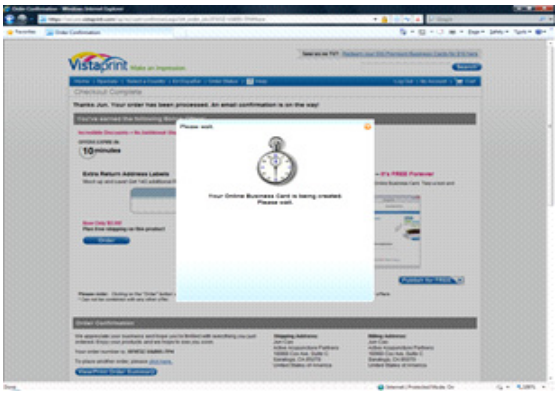

Figure A6. Vistaprint.com

Appendix B

Review of Literature

Table B1. Review of Literature on the Effects of Temporal and Non-Temporal Information on Perceptions of the Wait

Authors	Context	Independent Variables			Dependent Variables*		Additional Findings
		Actual Wait Time	Temporal Information	Non-Temporal Information	Perceived Waiting Time†	Wait Evaluation†	
No Effect							
Groth and Gilliland (2006)	Paper-and-pencil (Experiment)	30 minutes	• Waiting duration	• Explanation for the wait	N/A	(0) waiting duration	The nature of the explanation (i.e., whether provider is at fault or not) determines whether subjects like it better or not as compared to no explanation condition.
Whiting and Donthu (2006)	Telephone (Field)	Varies	• Waiting duration • Queue position	• Music	(0) waiting duration (0) queuing position (0) music	N/A	N/A
Positive Effect							
Areni and Grantham (2009)	Participating a research study (Experiment)	17.5 minutes	• N/A	• Music likeability	(+) music likeability	(+) music likeability	N/A
Cameron et al. (2003)	Participating a research study (Experiment)	10 minutes	• N/A	• Music likeability	(+) music likeability	(+) music likeability	N/A
Dellaert and Kahn (1999)	Web (Experiment)	0, 4 minutes	• Waiting duration • Countdown	• Internet magazine	N/A	(+) waiting duration (+) countdown	Waiting duration and countdown information affects the combined evaluation of the wait and the magazine.
Geelhoed et al. (1995)	Computer system (Experiment)	74 seconds	• Provision of a bar-gauge	• Incremental loading of webpage	(+) incremental loading of webpage N/A bar-gauge	N/A	Incremental loading display was judged faster than provision of a bar-gauge.
Hui and Zhou (1996)	Computer registration system (Experiment)	8, 12, 16 minutes	• Waiting duration	• N/A	(0) waiting duration	(+) waiting duration	N/A
Lee et al. (2012)	Web (Experiment)	16 seconds	• N/A	• Image • Text • Relevance • Motion	(+) Image (+) Text (+) Relevance (+) Motion	(+) Image (+) Text (+) Relevance (+) Motion	

Table B1. Review of Literature on the Effects of Temporal and Non-Temporal Information on Perceptions of the Wait (Continued)

Authors	Context	Independent Variables			Dependent Variables*		Additional Findings
		Actual Wait Time	Temporal Information	Non-Temporal Information	Perceived Waiting Time†	Wait Evaluation†	
Myers (1985)	Computer system (Experiment)	10 seconds, or varies between 1 to 17 seconds	• Progress indicator	• N/A	• N/A	(+) progress indicator	N/A
Pruyn and Smidts (1998)	Hospital (Field)	Varies	• N/A	• TV	(0) TV	(+) TV	Attention to TV increases in longer waits.
Negative Effect							
Chebat et al. (2010)	Web (Experiment)	45 seconds	• Waiting duration	• Music tempo • Gender	(-) waiting duration	(0) waiting duration	Moderating effects of music tempo and gender were observed.
Mixed Effect							
Antonides et al. (2002)	Telephone (Experiment)	10, 20, 30, 40, 60, 80, 120, and 180 seconds	• Waiting duration • Queue length	• Music	(+) waiting duration (0) queue length (0) music	(0) waiting duration (0) queue length (+) music	The effect of information was relatively positive for shorter waits, and negative for longer waits.
Harrison et al. (2007)	Computer system (Experiment)	5.5 seconds	• Progress indicator	• N/A	(+/0/-) progress indicator	N/A	Effects of progress indicators depend on their speed and pauses.
Hui et al. (1997)	Banking (Experiment)	4 minutes	• N/A	• Music valence	(-) music	(+) music	N/A
Hui and Tse (1996)	Computer registration system (Experiment)	5, 10, 15 minutes	• Waiting duration • Queuing position	• N/A	(-) waiting duration (0) queue information	(+) waiting duration (+) queue information	In shorter waits, no information is needed; in intermediate waits, waiting duration information is beneficial; in longer waits, queuing information is beneficial.
Katz et al. (1991)	Bank (Field)	Varies (averaging 3.6 minutes)	• Waiting duration	• Electronic newsboard	(+) waiting duration (0) electronic newsboard	(0) waiting duration (+) electronic newsboard	The positive effect of electronic newsboard increases in longer waits.
Kellaris and Kent (1992)	Music play (Experiment)	2.5 minutes	• N/A	• Music valence	(-) positive valence (+) negative valence	N/A	N/A
Oakes and North (2008)	Registration (Field)	Varies (from 4 to 6 minutes)	• N/A	• Music tempo • Music likeability	(+) music presence (-) music tempo (+) music likeability	(+/0) music presence (-) music tempo (+) music likeability	N/A
Tom et al. (1997)	Telephone (Experiment)	3 minutes	• N/A	• Music	(+/0) music	N/A music	Providing music improves service evaluation.

Table B1. Review of Literature on the Effects of Temporal and Non-Temporal Information on Perceptions of the Wait (Continued)

Authors	Context	Independent Variables			Dependent Variables*		Additional Findings
		Actual Wait Time	Temporal Information	Non-Temporal Information	Perceived Waiting Time†	Wait Evaluation†	
Others							
Bhatti et al. (2000)	Web (Experiment)	10 seconds	• N/A	• Incremental loading of webpage	N/A	N/A	Users' tolerance of delay increases with incremental loading of the Web pages.
DiClemente and Hantula (2003)	Web (Experiment)	0.5, 2, 4, 8, 16 seconds	• Provision of a digital clock on the computer screen	• N/A	N/A	N/A	Provision of a digital clock significantly increases time sensitivity of online users.
Nah (2004)	Web (Experiment)	Varies	• Provision of a moving bar	• Availability of pictures	N/A	N/A	Provision of a moving bar significantly increases tolerable waiting time, but availability of pictures doesn't.
Taylor (1995)	Career service (Field)	10 minutes	• N/A	• Magazine	N/A	N/A	Providing a magazine improves service evaluation.
Weinberg (2000)	Web (Experiment)	10 seconds	• Waiting time anchor	• N/A	(-) waiting time anchor	N/A	Both wait time estimate and homepage quality evaluation are biased towards the waiting time anchor provided.

*Following the common practice in the literature (e.g., Antonides et al. 2002), we used perceived waiting time and wait evaluation to summarize findings in the literature. Please note that perceived waiting time is also called *perceived wait duration* or *perceived quickness of the wait* in the literature. Wait evaluation is a general term, focusing on the affective aspect of the waiting experience. Wait evaluation has been measured in terms of affective response to the wait, emotional response to the wait, satisfaction with the wait, attitude toward the wait, or consumer waiting experience. It is important to differentiate between evaluation of the wait and the evaluation of the service itself. In Table 1, we focused on evaluation of the wait.

†0 = No effect; + = positive effect; - = negative effect; N/A = effect not available. For "Perceived Waiting Time," a positive effect resulted in a reduction in the perceived duration of the wait. For "Wait Evaluation," a positive effect resulted in a more positive evaluation of the wait.

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Appendix C

Summary of Items

Perceived quickness of the wait (1–7 semantic scale)

Questions 1 through 3 relate to the speed of the search. What do you think of the speed of the search?

1) Slow … Fast
2) Not speedy … Speedy
3) Not quick … Quick

Negative affect toward the wait

How much did the waiting make you feel _____?

1) Irritated (1 not at all … 4 neutral … 7 very much)
2) Annoyed (1 not at all … 4 neutral … 7 very much)
3) Frustrated (1 not at all … 4 neutral … 7 very much)
4) Unsatisfied (1 not at all … 4 neutral … 7 very much)

Impatience

Please read each statement below carefully. For each statement, circle the response which best represents your opinion. There are no right or wrong answers.

1) Typically, how easily do you get irritated? (1 not at all easily … 7 extremely easily)
2) How is your "temper" these days? (1 I seldom get angry … 7 very hard to control)
3) When you have to wait in line such as at a restaurant, the movies, or the post office, how do you usually feel? (1 accept calmly … 7 feel very impatient and refuse to stay long)

Attribution

Please indicate your degree of agreement with the following statements, with 1 indicating "strongly disagree" and 7 indicates "strongly agree."

1) There is a lot the website could have done to avoid or shorten the delay (1 strongly disagree … 7 strongly agree)
2) The delay was mostly caused by the design of the website (1 strongly disagree … 7 strongly agree)

Visual content

The following questions relate to the web page that you saw while waiting for your travel recommendations. Please assess the visual content of the web page that you saw while waiting by responding to the questions below.

1) The web page that I saw while waiting provided (1 low visual content … 7 high visual content)
2) While waiting, I saw a web page that contained (1 very little visual content … 7 a lot of visual content)
3) The amount of visual content that I saw while waiting was (1 very low … 7 very high)
4) The web page that I saw while waiting provided (1 not much visual content at all … 7 quite a lot of visual content)

Appendix D

Exploratory Factor Analysis Results

Inter-item Correlation Analysis*

	PQW1	PQW2	PQW3	NAW1	NAW2	NAW3	NAW4	IMP1	IMP2	IMP3	ATT1	ATT2	VC1	VC2	VC3	VC4
PQW1	**1.00**															
PQW2	**.923**	**1.00**														
PQW3	**.911**	**.951**	**1.00**													
NAW1	-.548	-.532	-.534	**1.00**												
NAW2	-.572	-.549	-.547	**.901**	**1.00**											
NAW3	-.533	-.508	-.505	**.858**	**.850**	**1.00**										
NAW4	-.645	-.615	-.619	**.781**	**.775**	**.788**	**1.00**									
IMP1	-.021	-.044	-.039	.097	.093	.052	.069	**1.00**								
IMP2	.045	.044	.053	.048	.061	.063	.052	**.552**	**1.00**							
IMP3	.016	.014	.009	.158	.175	.156	.174	**.388**	**.400**	**1.00**						
ATT1	-.596	-.592	-.585	.540	.528	.533	.574	.047	-.004	.008	**1.00**					
ATT2	-.455	-.447	-.434	.443	.424	.437	.450	.041	-.093	-.008	**.617**	**1.00**				
VC1	.065	.060	.057	-.044	-.048	-.073	-.091	-.087	-.076	.036	.033	.026	**1.00**			
VC2	.063	.054	.054	-.055	-.068	-.087	-.089	-.023	-.051	.050	.008	.003	**.923**	**1.00**		
VC3	.085	.072	.081	-.053	-.068	-.087	-.100	-.033	-.014	.092	-.009	.012	**.893**	**.924**	**1.00**	
VC4	.075	.057	.059	-.066	-.074	-.110	-.107	-.051	-.032	.059	-.012	-.014	**.883**	**.920**	**.938**	**1.00**

*PQW: Perceived quickness of the wait; NAW: Negative affect toward the wait; IMP: Impatience; ATT: Attribution; VC: Visual Content

Factor Analysis (Principle Component Analysis with Oblimin Rotation)*

	PQW	NAW	IMP	ATT	VC
PQW1	.976†				
PQW2	.976				
PQW3	.927				
NAW1		.913			
NAW2		.905			
NAW3		.894			
NAW4		.721			
IMP1			.873		
IMP2			.840		
IMP3		.312	.646		
ATT1				.930	
ATT2				.652	
VC1					.973
VC2					.970
VC3					.968
VC4					.955

*PQW: Perceived quickness of the wait; NAW: Negative affect toward the wait; IMP: Impatience; ATT: Attribution; VC: Visual Content
†Factor loadings smaller than 0.30 were omitted for a clearer presentation.

Appendix E

Screenshots of Input Pages on the Experimental Website

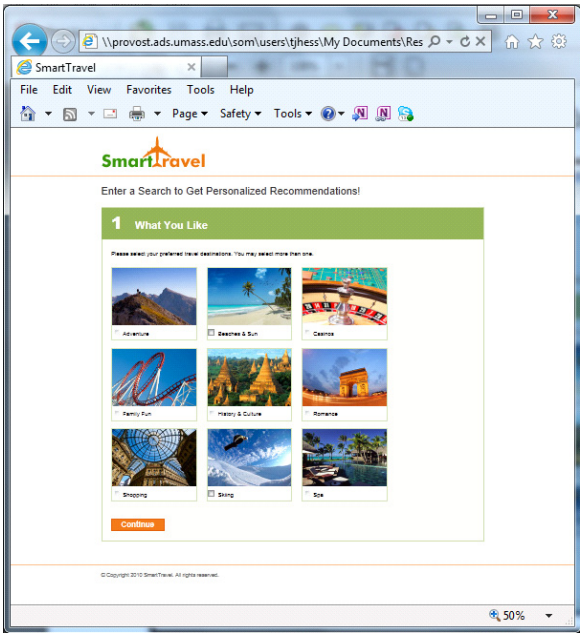

Figure E1. Studies 1 and 2: Input Page 1

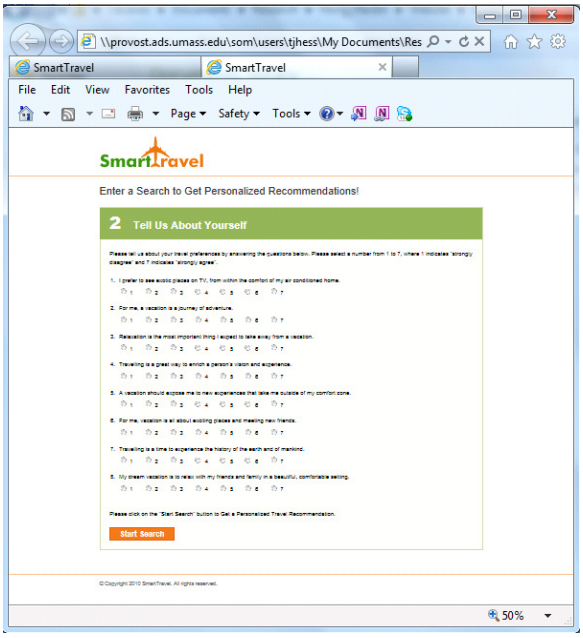

Figure E2. Studies 1 and 2: Input Page 2