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Short Communication

Economic hardship, ontological insecurity, and household food waste

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ABSTRACT

The experience of a downward change in one’s financial situation is so common that most consumers will experience it during their lifetime, and this prevalence has been compounded by the recent COVID-19 pandemic. Limited research, however, has examined the impact of economic hardship on consumers’ food-related behavior. Using a sample of Canadians and Americans (n = 519; Mage = 38.4; SDage = 13.6; 46.2% female; 85% lived alone), we identify that economic hardship significantly and negatively predicts consumer food waste behavior, such that economic hardship leads consumers to waste less food. Conversely, we also identify a positive indirect effect wherein economic hardship positively predicts ontological insecurity (i.e., the aversive feeling of being overwhelmed and out of control), which in turn positively predicts overconsumption (e.g., overstocking one’s fridge or pantry) and in turn predicts higher food waste. This preliminary work opens the door to future work exploring a potentially rich avenue of research on the implications of adverse economic events on consumer food choice, consumption, and disposal. Implications for research and practice are discussed.

1. Introduction

Adverse economic experiences are common in the marketplace, with most consumers experiencing at least one in their lifetimes (Verick, 2009). The COVID-19 pandemic saw unprecedented global economic strife, as countless industries lurched to a halt (Mogaji, 2020) and 114 million people lost their jobs (World Economic Forum, 2021). The implications of such adverse experiences, including negative changes in one’s financial situation (e.g., job loss, furlough, reduced hours, etc.), for food-related behavior represent an understudied domain (Chang, 2014). Here, we synthesize the literatures on socioeconomic status and psychological scarcity to explore the relationship between economic hardship and an important downstream consequence of consumers’ food choice, preparation, and consumption: food waste behavior.

According to the Food and Agriculture Organization (2013), about one-third of the food produced for human consumption is lost or wasted annually across the stages of production, distribution, sale, and consumption. This food waste also results in the waste of natural resources, energy, capital, and time; has destructive effects on the environment, society, and the economy; and threatens global food security (Schanes, Dornbier, & Gизet, 2018). Although food waste occurs throughout the supply chain, 50% takes place in the hands of consumers (Janssen, Nijenhuis-de Vries, Boer, & Kuimer, 2017)—that is, once consumers have acquired food from a retailer. Thus, new insights on consumer factors influencing food waste can present considerable opportunities with both theoretical and practical implications.

2. Theory and hypotheses

The current inquiry takes interest in economic hardship, which we propose is conceptually linked with both chronic financial restriction and situational scarcity mindset. We propose that negative financial events, and in particular, will impact consumer food waste behavior, with prior research providing reasons to theorize both negative and positive effects.

Prior work on socioeconomic status finds that lower income consumers are more conservative about spending their money on food (Porpino, Parente, & Wansink, 2015) and prefer to buy a small volume of food and based on their daily needs (Gustavsson, Cederberg, Sønson, Van Otterdijk, & Meybeck, 2011), reducing their consumption of ephemeral foods, such as fruits and vegetables (Poskute,
Campbell, Inman, Kirmani, and Price (2020) term overconsumption.

Wansink, 2015). That is, such consumers are engaging in providing feelings of abundance for oneself and loved ones (Porpino scarce resources (e.g., hoarding food; Long & Khoi, 2020; Mullainathan & Shafir, 2014; see Cannon et al., 2019), and over-preparing food to provide feelings of abundance for oneself and loved ones (Porpino & Wansink, 2015). That is, such consumers are engaging in overconsumption.

We theorize that experiencing economic hardship will activate a threat to one’s own sense of security and control, a phenomenon that Campbell, Inman, Kirmani, and Price (2020) term “ontological in/security”, which will activate consumer behaviors that in turn heighten food waste. An example behaviour is the overconsumption of particularly perishable items, which recent research found to increase among some consumers during the COVID-19 pandemic (Jaeger, Vidal, Ares, Chheang, & Mullainathan & Shafir, 2014; see Cannon et al., 2019), and which is readily subject to produce scarcity (e.g., hoarding food; Long & Khoi, 2020; Mullainathan & Shafir, 2014). As such, there is reason to believe that economic hardship may also prompt feelings of insecurity and a lack of control (i.e., ontological insecurity), prompting overconsumption as a means of engaging in control restoration (Cannon et al., 2019), and ultimately generating heightened food waste. Thus, we also theorize a positive relationship between economic hardship and food waste (H1b) through ontological insecurity and in turn overconsumption (H2; see Fig. 1). Put formally:

**H1a:** Economic hardship will be associated with decreased food waste. Specifically, those who experienced a decrease in financial resources in the prior year will waste less food.

In contrast, the self-regulatory model of scarcity suggests that psychological scarcity can activate feelings of being out of control, which can lead consumers to engage in a control-restoration process through their consumption behavior (Cannon, Goldsmith, Roux, & Kirmiani, 2019). This model further proposes that the control restoration mechanism can transpire by seeking novelty (e.g., obtaining new types of foods that one may not typically eat), preserving future choice (e.g., choosing a variety of flavors of a given product so that one can chose between them in the future), obtaining large amounts of otherwise scarce resources (e.g., hoarding food; Long & Khoi, 2020; Mullainathan & Shafir, 2014; see Cannon et al., 2019), and over-preparing food to provide feelings of abundance for oneself and loved ones (Porpino & Wansink, 2015). That is, such consumers are engaging in overconsumption.

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**H1b:** Economic hardship will be positively associated with food waste behavior. Those who experienced a decrease in financial resources in the prior year will waste more food.

**H2:** The effect of economic hardship on food waste will be mediated by ontological insecurity and overconsumption. Those who have recently experienced a decrease in financial resources will feel less ontologically secure, and will in turn over-consume, subsequently wasting more food. That is, the relationship between economic hardship and food waste will be mediated by ontological insecurity and overconsumption.

### 3. Method

#### 3.1. Participants and sampling

600 English-speaking adults who reside in Canada (13%) or the United States (87%), and who reported living in one- or two-person households¹ and engaging in grocery shopping, were recruited from the Prolific Academic (https://www.prolific.co/) platform on March 9, 2021. Participants were invited to take part in the second part of the study one week later, on March 16, 2021. The final sample after exclusions and attrition was comprised of 519 respondents (M_{age} = 38.4; SD_{age} = 13.60; 46.2% female; 85% lived alone). Institutional ethics approval was retained prior to data collection. Data was submitted to the Mendeley Data repository.²

#### 3.2. Measures

All items in the predictor and mediator measures are presented in full in the Methodological Detail Appendix (MDA): https://osf.io/rijm9/?view_only=1a77cf66c6b04d939fd0bc429f320c92.

##### 3.2.1. Economic hardship

Economic hardship was measured using five items (Cronbach’s alpha = 0.83), assessed on a 1 (much better) to 7 (much worse) scale (e.g., “Compared to my financial position last year, my financial position this year is” and “In comparison to last year, my ability to spend money freely is”) (Sharma & Alter, 2012). A higher (lower) value indicates financial hardship (financial ease).

##### 3.2.2. Ontological insecurity

Ontological insecurity was assessed using the “implosion” subscale of the ontological security measure (Marlowe, Nicholson Perry, & Lee, 2020). The 10-item scale (e.g., “I find the world to be overwhelming”; “At times, I feel persecuted by reality”; “Sometimes I am afraid that the world may cause me to lose control of my life”; Cronbach’s alpha = 0.93) was assessed on a 1 (not at all) to 5 (completely) scale, in line with previous research (Marlowe et al., 2020).

##### 3.2.3. Overconsumption

Overconsumption behavior was assessed using a four-item scale (Cronbach’s alpha = 0.85) anchored from 1 (not at all) to 6 (extremely). Respondents were asked the importance they placed on each of the following: Having a full pantry; Having a full fridge; Having lots of food on hand; Having a choice of food(s) for yourself. Scales were developed based on the self-regulatory model of scarcity presented by Cannon et al. (2019).

##### 3.2.4. Food waste behavior

Food waste behavior was assessed using a detailed and validated food waste inventory (van Herpen et al., 2019). Respondents indicated which of a set of 24 food categories (e.g., fresh vegetables and salad, fresh fruit, pasta, meat, fish, bread, etc.) they had disposed of in the previous week. A unit of measurement was provided for each food type which of a set of 24 food categories (e.g., fresh vegetables and salad, fresh fruit, pasta, meat, fish, bread, etc.) they had disposed of in the previous week. A unit of measurement was provided for each food type: 1 serving spoon; 1 to 2 servings; 2 to 4 pieces of fruit, approximately 1 piece; ¼ to ½ a piece of fruit, approximately ½ of a piece of fruit, approximately 1 piece of fruit, 2 to 4 pieces of fruit, and more than 4 pieces of fruit), whereas pasta was assessed by serving spoon (i.e., <1 serving spoon; 1 to 2

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¹ As household size is related to food waste (Schanes et al., 2018) and larger households may influence the extent to which purchaser mindset influences food waste processes, we constrained the sample to 1 or 2 person households to provide a cleaner test of our theory.

² Of the 600 respondents at Time 1, 599 were invited to participate after N=1 failed an attention check at Time 1. 560 completed Time 2 within the 1 week allotted. N = 9 respondents were removed for failed attention checks at time 2. N=32 were removed due to reporting living in a household larger than 2 (i.e., who slipped through the prescreen). This resulted in our final sample of 519 respondents.

³ https://doi.org/10.17632/h38jyc3kt.1.
obtained adequate fit for the measurement model (Table 1) with R version 4.0.4 (2021-02-15) to evaluate the measurement of financial hardship, ontological security, and overconsumption. Confir matory factor analysis (CFA) using maximum likelihood estimation obtained adequate fit for the measurement model ($\chi^2$(167) = 591.5, $p < .0001$, CFI = 0.922, TLI = 0.912, RMSEA = 0.071% CI [0.065–0.077]). Further details are presented in the MDA.

3.4. Validity checks

Validity checks were conducted utilizing R Studio [version 1.4.1106 with R version 4.0.4 (2021-02-15)] to evaluate the measurement of financial hardship, ontological security, and overconsumption. Confirmatory factor analysis (CFA) using maximum likelihood estimation obtained adequate fit for the measurement model ($\chi^2$(167) = 591.5, $p < .0001$, CFI = 0.922, TLI = 0.912, RMSEA = 0.071% CI [0.065–0.077]). Further details are presented in the MDA.

3.5. Statistical analysis

The data were analyzed using SPSS version 26 and the PROCESS version 3.5 macro model 6 to evaluate our theorized model (5000 bootstrap replications) (Hayes, 2018). Confidence intervals were reported at 95%. The model was specified with economic hardship (X) predicting total food waste (Y) with ontological insecurity (M1) and overconsumption (M2) as serial mediators. No outliers were detected at 95%. The model was specified with economic hardship (X) predicting decreased food waste. There is, however, also a positive indirect effect through ontological insecurity and overconsumption, partially mediating the direct effect. Notably, the magnitude of the indirect effect, while significant, was small compared to that of the direct effect. This preliminary work synthesizes theory on the relationship between socioeconomic status and food waste (e.g., Poppino et al., 2015) and psychological scarcity and consumer behavior (Cannon et al., 2019; Hamilton et al., 2019), finding support for both perspectives. Importantly, it suggests that the psychological factors influencing food disposal and waste may be a complex landscape ripe for further exploration.

Our findings present both theoretical and practical implications. Theoretically, our work suggests that marketplace forces negatively impacting the financial situation of consumers can lessen food waste overall. However, when it leaves consumers feeling out of control and overwhelmed (i.e., ontologically insecure), consumers in turn may seek to regain feelings of control by stocking their pantry, maintaining a full fridge, and generally having a lot of food on hand as a means of coping with their ontological insecurity. Notably, this overconsumption in turn predicts heightened food waste. This addresses the recent call for consumer researchers to examine how marketplace threats like the COVID-19 pandemic shape consumption behavior (Campbell et al., 2020), but

### Table 1

| Items                  | Alpha | Mean | SD  | Skewness | Kurtosis | Pearson Correlation | EH | OIS | OC |
|------------------------|-------|------|-----|----------|----------|---------------------|----|-----|----|
| Economic Hardship      | 5     | 0.827| 4.09| 1.08     | 0.075    | 0.29                | N  |     |    |
| Ontological Insecurity | 10    | 0.932| 2.01| 0.924    | 0.9      | 0.057               | N  | 0.211**| <0.001|
| Over-consumption       | 4     | 0.853| 4.15| 1.033    | -0.359   | -0.196              | N  | 0.002 | 0.089* |
| Food Waste             | 24    |      | 641.02| 791.89 | 2.67     | 9.67                | N  | -0.098*| 0.086 |

EH = Economic Hardship; OIS = Ontological Insecurity; OC = Overconsumption.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
future research should continue to explore the psychological factors shaping food disposal behaviors such as food waste, including the myriad ways that psychological scarcity or ontological security may influence such behaviors.

Practically, our work creates opportunities for social marketers and policy-makers to shape food waste behavior. For example, interventions that enable consumers to feel more ontologically secure could ameliorate the need to overconsume, which may in turn attenuate food waste. Further, marketing campaigns could reduce the incidence of over-purchasing or redundant purchasing by targeting consumers as they select their food (e.g., by placing ads in grocery shopping apps), thereby similarly attenuating food waste behavior. Finally, targeted interventions could access individuals or areas experiencing negative financial events through either digital or traditional media. Certainly, consumers experiencing economic hardships may not be best served by spending their increasingly scarce resources on food that they are ultimately more likely to waste. Future research should empirically test these possibilities.

5.1. Strengths and limitations

A major strength of the current study is its utilization of a detailed methodology for food waste measurement. Food waste, despite its importance, has presented a predicament for researchers seeking to capture this complex set of disposal behaviors because of how varied food choices and practices are across households (van Herpen et al., 2019).

While our sampling procedure is prevalent in consumer research and yielded a large international sample, some concerns have been raised about data quality from this source (Aquinas, Villamor, & Ramaini, 2021; Smith, Roster, Golden, & Albaum, 2016). Peer-reviewed research has found Prolific Academic’s recruitment procedures to be suitable to social science research (Palan & Schitter, 2018), and respondents on Prolific Academic have been found to be more appropriate for academic research than other platforms (e.g., MTurk; Peer, Brandimarte, Samat, & Acquisti, 2017). This study temporally separated predictor from criterion measurement to reduce the influence of common method bias (MacKenzie & Podsakoff, 2012) and utilized a bot check and attention checks at both Time 1 and Time 2 to reduce influence of respondent inattention. Nonetheless, sampling concerns and common method variance remain possible limitations of the current research.

5.2. Conclusion

Financial hardships are rampant in the marketplace, such that most consumers will experience it in their lifetimes (Verick, 2009). Many will experience it during an economic downturn such as that caused by the recent COVID-19 pandemic. We find a negative direct relationship between economic hardship and food waste, and we find that this experience of economic hardship prompts ontological insecurity, which leads consumers to over-consume and in turn waste more food—partially mediating the direct effect. This preliminary work opens the door to future work exploring a potentially rich avenue of research on the implications of adverse economic events on consumer food choice,
consumption, and disposal.

CRediT authorship contribution statement

Neda Ghafoorifard: Conceptualization, Methodology, Formal analysis, Data curation, Visualization, Writing – original draft, Writing – review & editing, Visualization. Rhiannon MacDonnell Mesler: Conceptualization, Methodology, Investigation, Resources, Data curation, Formal analysis, Writing – original draft, Writing – review & editing, Supervision, Project administration, Funding acquisition. Michael Basil: Conceptualization, Writing – review & editing.

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