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'Sustainable' marketing mixes and the paradoxical consequences of good intentions

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ABSTRACT

Global resource use and related emissions continue to rise despite decades of public and private sector marketing efforts to encourage more sustainable consumption. One question seldom addressed in the sustainability literature is the degree to which sustainable marketing mixes might paradoxically encourage higher levels of consumption by reducing purchase related guilt and costs. The current research examines fast fashion sustainability initiatives and finds evidence of moral self licensing and rebound effects that lead to higher predicted sales even among the most environmentally conscious consumers. Implications for sustainability researchers and practitioners are then discussed.

1. Introduction

Since the 1970s many prominent scholars have promoted the use of marketing's tools of persuasion and customer understanding as a means to increase the adoption of sustainable consumption behaviors and environmentally friendly/ethical products that could reduce threats from climate change, resource depletion, pollution, and the inequitable distribution of resources (e.g. Kotler and Levy 1971; Kotler and Zaltman 1971; Kotler 2011; Scott et al. 2014; Sheth et al. 2011). Unfortunately the sustainability efforts of scholars and practitioners during the intervening decades have not been as successful as hoped with per capita resource use and related greenhouse gas emissions declining relatively little in most developed countries and continuing to rise globally (Carrington 2018; Davis 2008; Middleton 2020; Todd 2019). Such discouraging results have frequently led to calls for redoubled efforts at making sustainable products more attractive to consumers to thereby close the attitude-behavior gap between the generally favorable public attitudes towards sustainable products/behaviors and their much less frequent adoption (Han et al. 2016; Park and Lin 2020; White et al. 2019). In contrast, little conceptual or empirical consideration has been devoted to the possibility that marketer success in closing sustainability attitude-behavior gaps might paradoxically be contributing to unsustainable levels of consumption (Gopalda, 2015; Olson, 2022; Phipps et al., 2013).

The focus here is the fast fashion industry where innovations in design, manufacturing, logistics, and retailing over the past 20+ years have generated high profits and rising industry sales by allowing brands such as Zara and H&M to offer reasonably priced versions of the latest runway styles up to 20 times per year as a means of encouraging consumers to frequently visit their stores and buy more clothing (Chan and Wong 2012; Ertekin and Atik 2015; Kim et al. 2013). This fast fashion success has also brought many environmental and social justice criticisms concerning both 'upstream' supply chain issues involving poor working conditions in manufacturing plants and wasteful use of natural resources, and 'downstream' consequences involving mountains of used clothing generated by consumers constantly chasing the latest fashion trends (Chan and Wong 2012; Hvass 2014; Pedersen and Gwozdz 2014; Pedersen et al. 2018). The fast fashion industry has responded to these criticisms by implementing a wide variety of sustainability programs that include increased use of organic textiles, improved efficiencies and working conditions in supply chains, and partnerships with charitable and environmental organizations to properly dispose of old clothes (Ertekin and Atik 2015; Hvass 2014; Kim et al. 2013; Shen 2014; Yang et al. 2017). The question the current research examines is the potential link between sustainable marketing mixes and the creation of conditions that may paradoxically contribute to unsustainable consumption levels, and the findings demonstrate a link between sustainability efforts and rebound and moral self licensing effects that lead to predicted increases in fast fashion sales across three consumer segments.

2. Background

The success of fast fashion brands and resulting rise in clothing consumption are closely linked to the habits and motivations of young women and other heavy buyers of fashion who are generally found to be

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happy with the innovations brought to the industry by fast fashion brands (Ertekin and Atik 2015; Kim et al. 2013). Fashion buyers enjoy shopping and like fast fashion's low prices and frequent turnover of collections mimicking the latest styles, because it gives them something new to look at during their store visits and allows them to develop their own unique look, while the low quality of fast fashion merchandise is seldom a concern because they rarely wear items more than a few times before moving on to newer styles (Joy et al. 2012; Morgan and Birtwistle 2009). Although there are some smaller segments who care about the sustainability issues, heavy consumers of clothing are more often worried about spending too much money on clothing or running out of closet space, and may assuage any guilt they feel by swapping/giving clothes to friends/charities or pledging to buy more durable clothes when they are older and more financially secure (Boboltz 2017; Feldman 2014; Joy et al. 2012; Morgan and Birtwistle 2009).

While customers are generally happy, the marketplace success of the fast fashion model has raised sustainability concerns about the industry's entire supply chain from raw material suppliers to used clothes recyclers and landfill operators (Achabou and Dekhili 2013; Bernardes et al. 2018; Ekstrom and Salomonson 2014; Pederson and Gwozdz 2014). For example, the cotton used in the fast fashion garments requires large amounts of scarce water and accounts for big shares of synthetic pesticide and insecticide use world-wide (Achabou and Dekhili 2013; Thorisdottir and Johannsdottir 2019), while the raw materials are most often processed and assembled into clothing items in developing countries where the industry has been accused of exploiting child labor and offering poor pay and working conditions (Chan and Wong 2012; Pedersen and Gwozdz 2014; Pedersen et al. 2018). The disposable nature of fast fashion clothing also creates additional waste management problems because their low quality makes them difficult to recycle or resell, which means over half of used clothing ends up in landfills or incinerators (Ekstrom and Salomonson 2014; Thorisdottir and Johannsdottir 2019).

Fast fashion brands and the clothing industry more generally have responded to these sustainability related criticisms and problems with earnest attempts at making their operations more sustainable while offering customers more sustainable fashion options (Chan and Wong 2012; Ekstrom and Salomonson 2014). For example, a wide variety of fast fashion, slow fashion, and luxury brands have launched corporate social responsibility initiatives to promote fur-free policies and Fairtrade textiles, introduced social and environmental guidelines and traceability programs for suppliers, incorporated more recycled materials in products and packaging, developed environmental performance measures and labeling schemes, and joined forces with recyclers and charities to increase environmentally responsible clothes recycling and disposal (Achabou and Dekhili 2013; Joy et al. 2012; Jung et al. 2020; Laitala and Klepp 2013; Pedersen and Gwozdz 2014; Pedersen et al. 2018). Many fast fashion brands have also launched eco-fashion collections that incorporate socially just and environmentally friendly practices, materials, and designs, including wider use of organic and recycled raw materials, more classic/timeless and durable styles, and extensive labeling for life extending laundry and care (Laitala and Klepp 2013; Pedersen and Gwozdz 2014; Pedersen et al. 2018; Yang et al. 2017).

These sustainability efforts often link together various elements of the supply chain, as for example the initiatives to incorporate more organic materials into their product lines has led fast fashion brands to work with agricultural producers to increase the yields and profitability of organic cotton farming, which has led to an over 3000% growth in organic cotton production since the 1990s (Achabou and Dekhili 2013; De Brito et al. 2008; Shen 2014). Unfortunately these sustainability initiatives have coincided with continually rising fast fashion sales, market share, and profits (Joy et al. 2012; Kim et al. 2013; Morgan and Birtwistle 2009), and the sustainability/fashion literatures have generally given little consideration to the possibility that sustainable marketing mixes might paradoxically lead to moral self licensing and/or rebound effects and consequent higher consumption (Gopalda 2015; Phipps et al. 2013; Thorisdottir and Johannsdottir 2019; Yang et al. 2017).

2.1. Moral self licensing

Moral self licensing is defined by virtuous acts that provide a cognitive 'license' to engage in ethically questionable behaviors that would otherwise generate feelings of guilt (Meijers et al. 2014; Merritt et al. 2010). Sustainable behaviors are deemed virtuous not only for the positive social justice or environmental benefits they might achieve, but also because of the tradeoffs in the form of higher costs/prices and lower quality/convenience/performance (Gleim and Lawson 2014; Luchs et al. 2010; Newman et al. 2014; Olson 2013a; Peattie and Peattie 2009), and these sustainability sacrifices can in turn give consumers a license to engage in 'guilt-free' ethically questionable acts (Khan and Dhar 2006; Lin et al. 2016; Merritt et al. 2010). Evidence of these real and perceived tradeoffs are frequently noted in the fashion literature where sustainable brands/collections are perceived by shoppers as more expensive, less stylish, and often less comfortable than 'regular' versions (Chan and Wong 2012; Han et al. 2016; Jagel et al. 2012; Joy et al. 2012; Niinimaki 2010).

Moral self licensing effects have been demonstrated across a wide range of domains including charitable donations, racism, dishonest behaviors, and contexts involving both hypothetical (intentions) laboratory studies and actual field behaviors (Blanken et al. 2015; Chang and Chu 2020; Conway and Peetz 2012; Khan and Dhar 2006; Mann and Kawakami 2012; Meijers et al. 2014). Within environmental contexts, Mazar and Zhong (2010) demonstrate that exposure to green products in a fictional online store provided their subjects a license to be greedy or cheat in subsequent non-environmentally related game tasks, while a field study by Karmarkar and Bollinger (2015) found reusable shopping bag mandates gave consumers license to buy additional indulgent groceries. Similarly, experiments involving real and imaginary green purchases were found to provide subjects with a license to engage in less green behavior during subsequent situations except among those with strong environmental self-identities that prevent licensing (Meijers et al. 2014). Although Meijers et al. tested a number of environmental contexts involving the use of organic textiles in fashion, previous research has not addressed how marketing mixes involving sustainable processes (i.e. supply chain efficiencies, fairer treatment of workers), products (i.e. eco-collections/brands and use of eco-friendly materials/designs) and promotions (i.e. recycling programs) might reduce consumer guilt and therefore provide a license to buy additional clothing that offsets some of the expected sustainability benefits, which is the focus of research question 1 (RQ1):

> **RQ1:** Do fast fashion marketing mixes involving sustainability initiatives reduce consumer guilt and provide buyer's a license to purchase more clothes?

2.2. Rebound effects

The concept of rebound effects evolved from English economist William Jevon's 19th century observation that more efficient coal use had the paradoxical effect of increasing its use due to the consequent lower consumption costs (Michaels 2012; Sorrell 2009). Rebound effects have been measured in a wide variety of consumer contexts where at least some of the expected reductions in resource use and related emissions are offset by greater or more intense use among buyers/users of energy efficient climate control systems, home appliances, and cars (Davis 2008; Michaels 2012; Olson 2013b; Phipps et al. 2013; Sorrell 2009). Although rebound effects are most typically measured via product use frequency (i.e. driving more) or intensity (i.e. turning the heat up), Olson (2013a) also found evidence of product specification based rebound effects where more energy efficient cars and TV sets led to a greater consumer preference for more powerful vehicles and larger

screen sizes whose greater energy use would offset some of the expected efficiency based advantages. Previous research has not empirically demonstrated purchase quantity based rebound effects that might explain the rise in fast fashion sales during the same time frame that the industry has applied their vast mass market economies of scale and operating efficiencies to sustainability initiatives including more cost competitive eco-clothing, efficient acquisition of sustainable raw materials, and recycling of old garments (Achabou and Dekhili 2013; Kim et al. 2013; Shen 2014; Sorescu et al. 2011), which are the focus of RQ2.

RQ2: Do fast fashion brand efficiencies that reduce prices on more sustainable products/practices lead to more clothing purchases?

3. Method

3.1. Pre-Study

Due to the dearth of previous research on the possible paradoxical consumption consequences of sustainable marketing mixes (Olson, 2022; Phipps et al., 2013; Thorisdottir & Johannsdottir, 2019; Yang, Song, & Tong, 2017), a pre-study was conducted to determine the degree of fashion consumer awareness regarding the guilt reducing and efficiency enhancing marketing mix elements that could give rise to moral self licensing and rebound effects. Previous research has identified young women as the heaviest buyers of fast fashion brands (Kim et al. 2013; Ko et al. 2013; Morgan and Birtwistle 2009), and as a consequence in-depth interviews were conducted with 12 female respondents aged 18 to 30 (average age 22) recruited from online forums devoted to fashion brands and environmental causes to gain insights from women with varying degrees of interest in fashion and the environmental movement. The interviews lasted 8 to 10 min, with sampling continuing until redundancy in responses was achieved. Filter questions ensured that all respondents were familiar with fast fashion brands and business models, but given the politically correct nature of the sustainability topic 3rd person projective techniques were used on the open-ended questions to put respondents at ease and encourage more honest answers.

To address the perceived likelihood of efficiency induced rebound effects, the first question asked respondents: 'how can fast fashion brands offer the latest fashions at such low prices?' Common responses included use of sweat shops/low wages to workers, cheap materials and workmanship, and economies of scale and efficient production processes. Environmental corner-cutting was also mentioned, but only by two eco-oriented respondents. For respondents who did not initially consider possible economies of scale and efficiency effects a follow-up probe asked 'could efficiency or economies of scale be at least partly responsible for fast fashion low prices and quick response to new fashion trends?', and all the respondents agreed such efficiencies were likely to be at least partly responsible.

To address possible guilt induced moral self licensing effects, the next question asked respondents: 'does the typical fast fashion buyer feel some guilt about buying too many clothes, and if so why?' The almost universal response was that yes they thought many felt guilt, but the reasons for the guilt varied and included full closets, buying more than they could afford, having lots of unworn clothes already, guilt about the environmental damage caused by excess consumption, or supporting sweatshops by making purchases. A follow-up probe asked about environmental or social justice related guilt for those who did not initially mention these issues, and the answers were mixed as some thought it was possible, but more thought that heavy fashion buyers were more likely to feel guilt related to stuffed closets and large credit card bills.

To address possible responses to guilt related moral self licensing effects, a further question asked: 'what does the typical fast fashion buyer do to reduce any guilt they feel from buying more clothes than they need?' Responses included buying fewer or less expensive clothing, buying more eco-clothing lines/brands or sustainably produced clothes made from recycled/organic/durable materials, buying more timeless or classic fashions that can be worn longer, buying from thrift stores or trading clothes with friends, and giving old clothes to charity or putting them in recycling bins. A follow-up question asked respondents: 'do these responses to guilt require sacrifice that might be painful to many fashion buyers?' The near universal response was yes, with reasons including the belief that cutting back on purchases was painful for people who love fashion or shopping, while eco-clothing and sustainable clothes were often considered less attractive or comfortable and more expensive than 'regular' fashions with several respondents admitting they didn't like recycled materials or buying 2nd hand. Several respondents also didn't think young fashion oriented people would want to wear the same classic or timeless styles or more durable clothes for long periods of time, which is something they associated with older buyers. Although a few respondents indicated some hardship in giving away favorite items, most deemed giving used clothes to charity or recycling bins as mostly pain-free, especially since some stores offered recycling or charity collection points that were convenient to use, and several mentioned that they appreciated that their old clothes would find good further use rather than end up in the trash bin.

Returning to some rebound effect related themes led to the question: 'how would the typical fashion buyer react if fast fashion brands applied their economies of scale and efficiencies to the creation of stylish and inexpensive eco-friendly clothes or other sustainable activities such as clothes recycling?' Virtually everyone responded the same way; most would buy even more clothes, although several respondents acknowledged that fast fashion brands were already doing many of these things. Only two eco-focused respondents suggested that they would be suspicious that fast fashion brands could actually make stylish and cheap clothes that were also eco-friendly, but still suspected many would want to buy them. Finally the respondents were asked to: 'please describe the fashion buyer who would be most and least likely affected by guilt or cost reducing sustainability activities of fast fashion brands?' The universal answers for 'most affected' were very fashion oriented buyers who buy lots of clothes and very cost conscious buyers looking for the best deals, while the 'least affected' were generally believed to be the most environmentally focused who buy minimal amounts of clothes.

The pre-study results confirm some findings in earlier research such as the guilt of frequent purchases being reduced by the giving away/recycling old clothes, but more importantly that young female fashion buyers do perceive the possibility that guilt reducing and/or efficiency enhancing sustainability efforts by fast fashion brands could lead to more clothing purchases.

3.2. Main study sample and method

The main study is conducted in Norway, a country with a reputation for high environmental concern amongst its citizens and therefore a potentially challenging environment for research questions involving unsustainable consumption (Laitala and Klepp 2013; Olson 2013a, 2018). Following the procedures utilized in previous fashion research (e.g. Chan and Wong 2012), young female respondents were recruited via mall intercepts and randomly approached outside several clothing retailers and offered a lottery chance for a gift certificate to encourage participation. Total sample size is 128 with an age range of 18 to 35 (mean = 25), and all respondents were familiar with fast fashion brands and had an average self-reported fast fashion purchase rate of 57% of their total clothing purchases.

Conjoint analysis is utilized due to its ability to simulate decision making involving attribute tradeoffs common in sustainability contexts (Green et al. 2001; Olson 2013a), and because of its successful use in determining the importance of sustainability attributes among clothing buyers in previous research (e.g. Achabou and Dekhili 2013; Chan and Wong 2012). The pre-study results and a review of sustainability related fashion literature and sales trends were used to select real world relevant model attributes and levels representing popular sustainable and non-sustainable marketing mix elements important to fashion buyers and

not likely to be viewed negatively by the sample, including sustainability related promotions that have been found to be important or influential to fashion buyers (Achabou and Dekhili 2013; Chan and Wong 2012; Hvass 2014; Trudel and Cotte 2009). This process resulted in a 3 attribute model with the following levels: (1) Brand type; a) Fast Fashion, b) Non-Fast Fashion brand – e.g. traditional, luxury, slow, eco, or ethical brand, (2) Style type; a) Trendy – current hot style, b) Classic - timeless, and c) Eco – e.g. using more durable/ethical production and design, and (3) Promotion type; a) in-store Recycling bin with purchase credit certificate, b) communication promoting brand's use of Fairtrade Organic textiles, c) communication promoting brand's energy Efficiency success in manufacturing and distribution. Since all the Promotion attribute levels offer a 'sustainable' benefit (e.g. environmental and/or social justice), all combinations evaluated by the respondents offer at least one 'sustainable' benefit, and the pre-study and previous literature suggest that the Classic and Eco Styles, and non-Fast Fashion Brand attribute levels will also be perceived as at least somewhat 'sustainable' by most respondents while the Trendy Style and Fast Fashion Brand levels will be perceived as offering few if any sustainability benefits.

In keeping with the conjoint model simplification practices successfully employed in previous green trade-off research to avoid references to brand sets or product characteristics too numerous to accommodate, respondents were told to: 'imagine you are shopping among alternatives of your favorite fast fashion and non-fast fashion brands (i.e. traditional, luxury, slow, eco, or ethical brands), and preferred styles within the described style type for clothing items you regularly buy' (Olson 2013a). A fractional factorial design generated nine product profiles (cards), and respondents were asked to evaluate each card on four dependent measures: (1) a 10-point product preference attitude scale (e.g. 'described clothing is greatly disliked <> greatly liked'), (2) a 10-point guilt expectation scale (e.g. 'described clothing greatly decreases shopping guilt <> greatly increases shopping guilt'), (3) an open-ended 'price they would expect to pay for the described clothing from this collection' (in Norwegian Kroner), and (4) an open-ended 'quantity they would expect to buy from the described collection assuming a budget and need/desire for approximately 10 items of clothing'. The use of multiple dependent variables and the price expectation measure are similar to the tradeoff focused conjoint design successfully employed by Olson (2013a), where the price variable was found to reflect the total utility of the described bundle of attribute levels to allow respondents to consider brands/items with a much wider range of actual retail prices than the alternative of using a price attribute with only three or four levels. Pearson's R for all 4 dependent variables are 0.95 and above (i.e., correlation between the conjoint model's predicted scores and the actual respondent scores on each of the conjoint cards), which indicates good attribute understanding and high consistency in respondent preferences for the differing attributes levels.

3.3. Segmentation

Previous research and the pre-study results suggest that fashion buyers have differing priorities in terms of following the latest styles or creating their own look, price consciousness, and sustainability concerns, and that those with sustainability concerns may feel less moral self licensing influences (Jagel et al. 2012; Joy et al. 2012; Kim et al. 2013; Meijers et al. 2014; Niinimaki 2010). Thus after completing the conjoint card task, respondents answered questions covering demographics and a series of 7-point strongly disagree-strongly agree scale questions adopted from Olson (2018) addressing the Style dimension: a) always prefer trendy styles, b) enjoy buying newest styles, c) possess high fashion knowledge; the Price dimension: a) low prices always important, b) always look for good deals; and the Environmental dimension: a) environmental friendliness is always important, b) proper clothing recycling is always important, c) possess high environmental knowledge. Cronbach's Alpha is 0.87 or higher on each dimension justifying the combining of the individual items into 3 indexes for segmenting purposes.

Quick cluster analysis is utilized to determine if separate segments exist within the dataset using the individual respondent scores on the index measures, which confirmed 3 segments with 55 respondents classified as style conscious (SC) based on their significantly highest score of 5.5 on the Style index (vs. 3.8 PC, 3.4 EC), 40 respondents classified as price conscious (PC) with a significantly highest score of 5.8 on the Price index (vs. 4.3 SC, 3.8 EC), and 33 respondents classified as eco-conscious (EC) with a significantly highest score of 5.8 on the environmental index (vs. 4.4 SC, 4.1 PC)($p < .05$). Due to the importance of social justice issues respondents were also asked questions: a) social justice is always important, and b) possess high social justice knowledge; which had adequate reliability scores but did not prove to be significant differentiators in the cluster analysis across the 3 segments or useful as a possible 4th social justice segment, and were therefore dropped as segmenting criteria.

4. Results

Tables 1 and 2 present the conjoint analysis results. In terms of the Preference dependent variable the overall sample's most preferred combination is a Fast Fashion brand (coefficient = 0.65), Classic style (0.38), and Recycling promotion (0.90), but as shown in Table 1 there is some variance between the segments. Table 1 also shows that in terms of preference for the more sustainable attribute levels, 26% of the entire sample has a positive coefficient to indicate preference for Non-Fast Fashion brands, which includes 100% of the EC segment but only 5% of the SC and 0% of the PC segments. On the Style attribute, 53% of the entire sample have positive coefficients for the Eco-Style (100% EC, 93%

Table 1
Preference and Guilt Dependent Variable Conjoint Results.

Preference Dependent	All	Eco-Conscious	Price Conscious	Style Conscious
n =	128	33	40	55
Brand Importance % (1)	24.6	18.3	33.2	21.5
Fast Fashion coef. / % + (2)	0.65 / 74	-0.49 / 0	1.79 / 100	0.47 / 95
Non-Fast Fashion coef./ %+	-0.65 / 26	0.49 / 100	−1.79 / 0	-0.47 / 5
Style Importance %	49.5	65.5	22.1	59.5
Classic coef./ % +	0.38 / 77	0.52 / 100	0.75 / 98	0.01 / 51
Trendy coef. / % +	0.12 / 45	−2.23 / 0	−1.13 / 0	2.61 / 100
Eco coef. / % +	-0.50 / 53	1.70 / 100	0.59 / 93	−2.62 / 0
Promotion Importance %	25.9	16.2	42.2	19.0
Recycling coef. / % +	0.90 / 78	0.51 / 90	2.28 / 100	0.08 / 56
Fairtrade Organic coef./ % +	-0.06 / 41	0.01 / 43	-0.03 / 49	-0.12 / 35
Efficiency coef. / % +	-0.84 / 27	-0.52 / 3	−2.24 / 0	0.04 / 58
Constant	4.80	4.98	4.56	4.78
Guilt Dependent (3)	All	EC	PC	SC
Brand Importance %	14.9	37.5	7.7	42.2
Fast Fashion coef. / % -	0.31 / 43	1.38 / 0	-0.27 / 85	0.10 / 35
Non-Fast Fashion coef. / % -	-0.31 / 57	−1.38 / 100	0.27 / 15	-0.10 / 65
Style Importance %	61.8	50.0	57.6	46.6
Classic coef. / % -	−2.15 / 98	-0.82 / 93	−2.22 / 100	−2.86 / 100
Trendy coef. / % -	1.45 / 8	1.92 / 0	2.59 / 0	0.29 / 18
Eco coef. / % -	0.70 / 52	−1.10 / 100	−1.68 / 90	2.57 / 0
Promotion Importance %	23.3	12.5	32.2	11.2
Recycling coef. / % -	−1.00 / 91	-0.17 / 63	−1.68 / 100	-0.98 / 100
Fairtrade Organic coef./ % -	0.22 / 32	-0.27 / 93	0.69 / 0	0.16 / 23
Efficiency coef. / % -	0.78 / 2	0.44 / 10	1.00 / 0	0.82 / 0
Constant	4.85	4.76	4.77	4.88

Notes: 1) Attribute importance is the % of total variance explained by each of the 3 attributes. 2) % + or % - = % of respondents with positive (+) or negative (-) coefficient for attribute level. 3) Negative Guilt coefficients mean that attribute level reduces guilt.

Table 2
Price Expectation and Purchase Quantity Dependent Variable Conjoint Results.

Price Dependent (1)	All	Eco-Conscious	Price Conscious	Style Conscious
Brand Importance %	40.5	45.4	39.5	37.5
Fast Fashion coef. / % - (2)	−189 / 99	−213 / 100	−195 / 100	−166 / 98
Non-Fast Fashion coef. / % -	189 / 1	213 / 0	195 / 0	166 / 2
Style Importance %	32.0	24.6	31.8	35.9
Classic coef. / % -	−75 / 81	−48 / 63	−84 / 83	−84 / 89
Trendy coef. / % -	−74 / 82	−47 / 67	−93 / 95	−75 / 81
Eco coef. / % -	149 / 8	96 / 13	177 / 2	159 / 9
Promotion Importance %	27.6	30.0	26.3	26.6
Recycling coef. / % -	−112 / 88	−118 / 90	−107 / 88	−110 / 88
Fairtrade Organic coef./ %-	129 / 3	146 / 0	148 / 0	103 / 7
Efficiency coef. / % -	−17 / 59	−27 / 63	−41 / 76	7 / 44
Constant	1177	905	1275	1245
Quantity Dependent	All	EC	PC	SC
Brand Importance %	27.0	17.4	35.0	26.3
Fast Fashion coef. / % +	0.49 / 76	-0.10 / 23	0.85 / 98	0.56 / 88
Non-Fast Fashion coef. / %+	-0.49 / 24	0.10 / 77	-0.85 / 2	-0.56 / 12
Style Importance %	45.1	57.9	30.6	47.4
Classic coef. / % +	0.55 / 74	-0.37 / 7	0.64 / 90	1.04 / 98
Trendy coef. / % +	-0.31 / 27	-0.75 / 3	-0.25 / 24	-0.08 / 40
Eco coef. / % +	-0.25 / 34	1.12 / 97	-0.40 / 27	-0.96 / 5
Promotion Importance %	27.9	24.7	31.9	26.2
Recycling coef. / % +	0.51 / 84	0.11 / 63	0.78 / 95	0.54 / 86
Fairtrade Organic coef./ % +	-0.38 / 18	-0.13 / 47	-0.59 / 0	-0.37 / 16
Efficiency coef. / % +	-0.13 / 30	0.02 / 40	-0.19 / 27	-0.17 / 26
Constant	11.3	12.1	10.9	10.8

Notes: 1) Negative Price coefficients mean that attribute level reduces expected price in Norwegian Kroner. 2) % + or % - = % of respondents with positive (+) or negative (-) coefficient for attribute level.

PC, and 0% SC), and 77% have positive coefficients for the Classic style (100% EC, 98% PC, and 51% SC), while on the Promotion attribute the proportion with positive coefficients among the entire sample include 78% for Recycling (100% PC, 90% EC, 56% SC), 41% for Fairtrade Organic (49% PC, 43% EC, 35% SC), and 27% for the Efficiency promotion (58% SC, 3% EC, 0% PC).

In terms of the Guilt dependent variable, the overall sample's most guilt reducing combination is a Non-Fast Fashion brand (-0.31), Classic style (-2.15), and Recycling promotion (-1.0), but as shown in Table 1 there are again some differences between the segments. For the more sustainable attribute levels, 57% of the entire sample has a negative coefficient to indicate lower guilt for Non-Fast Fashion brands (100% EC, 65% SC, 15% PC). On the Style attribute, 52% of the entire sample have negative coefficients for the Eco-Style (100% EC, 90% PC, and 0% SC), and 98% have negative coefficients for the Classic style (100% PC and SC, 93% EC), while on the Promotion attribute 91% of the overall sample have negative coefficients for Recycling (100% for PC and SC, 63% EC), followed by Fairtrade Organic at 32% (93% EC, 23% SC, 0% PC), and 2% for the Efficiency promotion (10% EC, 0% SC and PC).

The expected Price dependent variable results in Table 2 show that the overall sample believes the lowest price combination consists of Fast Fashion brands (-188.8), Classic style (-75.3), and Recycling promotion (-111.9) with between segment variance only on the style attribute. For the more sustainable attribute levels, only 1% of the entire sample has a negative coefficient to indicate lower expected price for Non-Fast Fashion brands (2% SC, 0% EC and PC), while on the Style attribute 81% of the entire sample have negative coefficients for the Classic style (93% PC, 89% SC, 63% EC), 8% have negative coefficients for the Eco-Style (13% EC, 9% SC, and 2% PC), and on the Promotion attribute 88% of the entire sample have negative coefficients on Recycling (90% for EC, 88% for PC and SC), followed by Efficiency at 59% (76% PC, 63% EC, 44% SC), and 3% for the Fairtrade Organic (7% SC, 0% PC and EC).

Finally, the Quantity dependent results show that the overall sample expects to buy the most clothing when the collection utilizes a Fast Fashion brand (0.49), Classic styling (0.55), and the Recycling promotion (0.51), but with variance across the segments (see Table 2). With regards to the expected purchase quantities for the more sustainable attribute levels, 24% of the entire sample has a positive coefficient to indicate greater purchase quantities for Non-Fast Fashion brands (77% EC, 12% SC, 2% PC), while on the Style attribute 74% of the entire sample have positive coefficients for the Classic style (98% SC, 90% PC, and 7% SC), 34% for the Eco-Style (97% EC, 27% PC, and 5% SC), and on the Promotion attribute the Recycling promotion has 84% positive coefficients (95% PC, 86% SC, 63% EC), with Efficiency at 30% (40% EC, 27% PC, 26% SC), and Fairtrade Organic at 18% (47% EC, 16% SC, 0% PC).

4.1. Segment conjoint results

The PC conjoint results across the dependent variables are highly consistent in terms of favoring low price attribute levels. Thus Fast Fashion brands are not only expected to have the lowest price, but are also most preferred, reduce the guilt the most, and increase expected quantity the most. Similarly, the Recycling promotion (with purchase credit certificate) is expected to offer the lowest price, and is also the favorite in terms of preference, guilt reduction, and purchase quantity. Only on style is there some inconsistency, because the cheapest style is Trendy, but the Classic style provides the best scores in terms of preference, guilt reduction and expected quantity while also having a negative coefficient average on the price dependent variable indicating that it is also perceived as price reducing, which previous research suggests is due to the lower total ownership costs for longer wearing Classic styles (Jagel et al. 2012).

The EC segment conjoint results demonstrate the expected preferences for sustainable attribute levels across most conjoint dependent variables, but with the recognition they are also more costly. Thus they perceive Fast Fashion brands to be cheapest, but they prefer, feel less guilt, and expect to buy more Non-Fast Fashion brands. The EC segment also shows the most interest in the Eco-style clothing, which they prefer over Classic and Trendy in terms of overall preference, guilt reduction, and expected quantity purchased even though they expect it to be the most expensive. The EC segment promotional preferences show that Recycling is most preferred and also associated with the lowest price and greatest purchase quantity, but that the Fairtrade Organic promotion is associated with the lowest guilt, highest expected price, and lowest purchase quantity.

With the exception of consistent preference for the Recycling promotion, inconsistencies in SC segment attribute level preferences across the conjoint dependent variables suggest they are the most conflicted between the fashions they like and their sustainability related concerns. In line with previous research and their stated fashion interest, their highest overall preference is for the non-sustainable Fast Fashion brands and Trendy styles (Morgan and Birtwistle 2009), but these brand and style preferences are not consistently favored on the other dependent variables. Thus guilt reduction is most associated with Non-Fast Fashion brands and Classic style, while lowest expected price and highest expected purchase quantities are most associated with Fast Fashion brands and Classic styles.

4.2. Moral self licensing and rebound effect research question results

RQ1 and RQ2 are addressed by the regression model shown in Fig. 1 that combines the 4 conjoint dependent variables to capture how differences in the size of preference, guilt, and cost gaps associated with varying levels and types of sustainable marketing mixes predict the gap

between the purchase quantity associated with the most preferred brand/style/promotion (B/S/P) configuration and configuration with the highest purchase quantity. The 4 predictor variables include Gap 1 between the conjoint derived constant + attribute coefficient scores for the most preferred B/S/P configuration and the equivalent score for the lowest price B/S/P configuration on the Preference dependent variable (i.e. overall average most preferred score = 8.9, 8.5 SC, 9.6 PC, 8.5 EC; overall lowest price configuration preference score = 6.0, 6.8 SC, 6.6 PC, 4.0 EC; overall gap = 2.9, 1.7 SC, 3.0 PC, 4.5 EC). Gap 2 between the most preferred B/S/P configuration and the lowest guilt B/S/P configuration on the Preference dependent variable (i.e. overall average of most preferred score same as gap 1 above, overall lowest guilt preference score = 6.8, 4.8 SC, 8.8 PC, 7.5 EC; overall gap = 2.1, 3.7 SC, 0.8 PC, 1.0 EC). Gap 3 between the most preferred B/S/P configuration and the lowest guilt B/S/P configuration on the Guilt dependent variable to capture moral self licensing influence of guilt reducing marketing mixes (i.e. overall average lowest guilt score = 0.8, 0.08 SC, 0.5 PC, 1.2 EC; overall highest preference guilt score = 3.2, 5.0 SC, 1.8 PC, 1.9 EC; overall gap = -2.4, −4.2 SC, −1.2 PC, −0.7 EC). Gap 4 between the most preferred B/S/P configuration and the lowest price B/S/P configuration on the expected Price dependent variable to capture the efficiency related rebound effects of price reducing marketing mixes (i.e. overall average lowest expected price score = 722 Norwegian Kroner, 803 SC, 817 PC, 446 EC; overall highest preference expected price score = 1018, 983 SC, 1003 PC, 1066 EC; overall gap = -297, −180 SC, −186 PC, −620 EC). Linear regression is utilized on the overall sample and at the individual segment levels to determine the degree to which these four gaps predict the quantity gap between the B/S/P coefficients + constant configuration associated with the highest purchase quantity and the most preferred B/S/P configuration on the Quantity dependent variable (i.e. overall highest preference quantity score = 12.5 clothing items, 13.7 EC, 12.5 PC, 11.5 SC; overall average highest quantity score = 13.7, 14.6 EC, 13.3 PC, 13.2 SC; overall gap = -1.2, −0.9 EC, −0.8 PC, −1.7 SC). The adjusted explained variance of the four predictor gaps in accounting for the quantity gap dependent variable is 48% for the overall sample (57% SC, 54% PC, 35% EC – see Exhibit 1).

As shown in Fig. 1 both the moral licensing guilt gap (RQ1 – gap 3) and rebound effect price gap (RQ2 – gap 4) are significant predictors of the purchase quantity gap across the entire sample and at the individual segment levels suggesting that smaller price gaps and smaller guilt gaps are associated with smaller quantity gaps between the most preferred B/S/P configuration and the highest quantity B/S/P configuration ($p < .05$). Only in the case of the EC segment are any of the preference related gaps (gaps 1 and 2) also significant predictors of the quantity gap, as a smaller preference gap between the lowest price configuration and most preferred configuration is also associated with a smaller purchase quantity gap. Thus with that single exception, purchase quantity gap size is not significantly associated with gaps in the relative preference of the most preferred configuration versus preference for cheaper or less guilt inducing configurations, but instead on the perceived guilt or price gaps between the lowest guilt and lowest priced configurations and the guilt and price associated with the most preferred configuration. Analysis of the conjoint derived guilt score for the highest quantity B/S/P configuration confirmed that it offered equal or lower guilt versus the most preferred configuration for 81% of the total respondents (88% PC, 85% SC, 64% EC), and that the conjoint derived expected price for the highest quantity B/S/P configuration was equal or lower than the expected price for the most preferred configuration among 61% of the total sample (91% SC, 54% PC, 18% EC). Furthermore, analysis of the attribute level conjoint coefficients for sustainable attribute levels (i.e. non-fast fashion Brand, Classic or Eco-Style) versus less sustainable attribute levels (i.e. Fast Fashion brand and Trendy Style) on the Preference

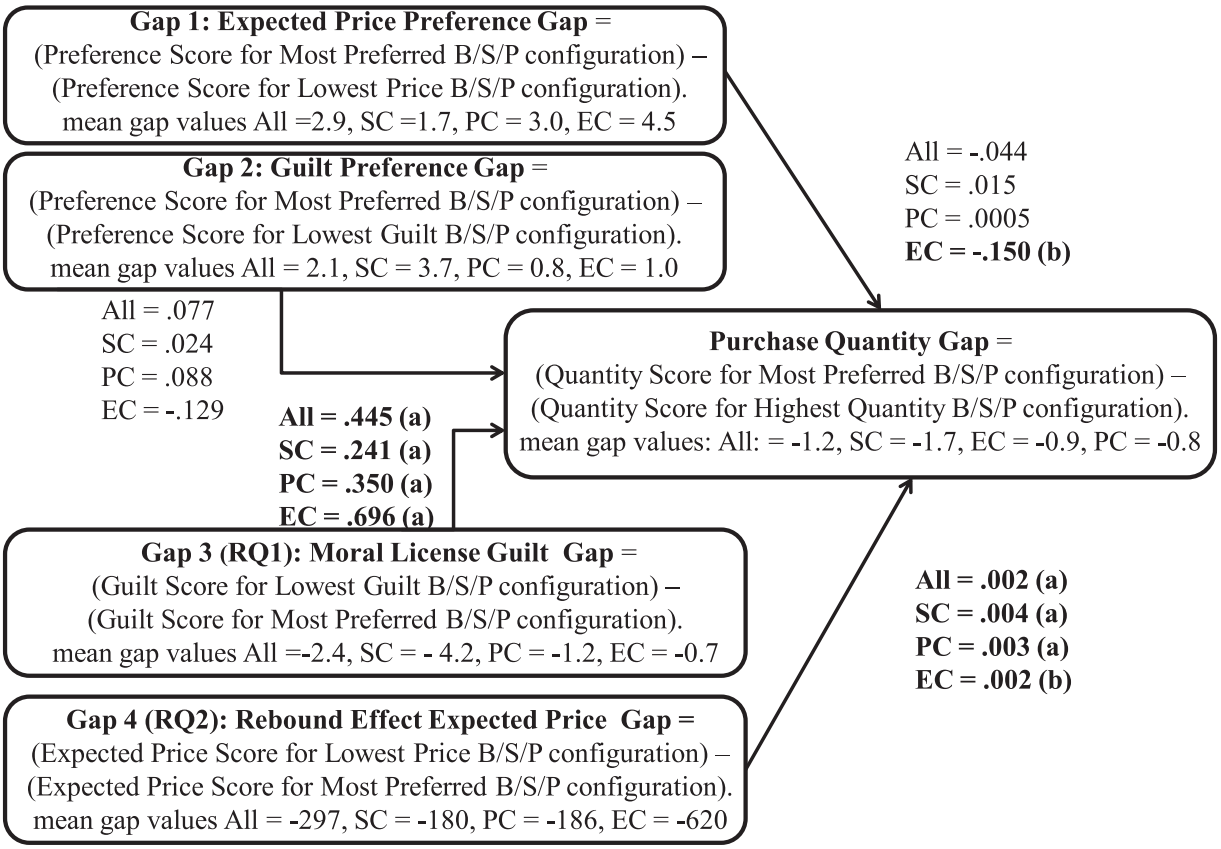

Fig. 1. Moral Licensing and Rebound Effects Model. **Note:** Configuration = conjoint derived coefficients for B (brand) + S (style) + P (promotion) + constant. SC = style conscious segment, PC = price conscious segment, EC = eco-conscious segment. Conjoint model constants: Overall = .224, SC = -.17, PC = .047, EC = 1.315. Model adjusted explained variance: .48 overall, SC = .57, PC = .54, EC = .35. (a) = path coefficient significant at $p < .01$, (b) = $p < .05$.

dependent variable revealed equal or greater preference for the sustainable attribute levels of the highest quantity B/S/P configuration versus the most preferred configuration for 94% of the respondents (100% SC, 95% PC, 79% EC). Thus the conjoint derived price, guilt, or sustainable attribute level preference scores favored the highest quantity B/S/P configuration versus the equivalent figures for the most preferred configuration among 99% of the total sample (100% SC, 98% PC, 97% EC), which confirms that reducing the purchase quantity dependent variable gap presented in Fig. 2 is dependent on implementing improved marketing mixes that lead consumers to perceive that their preferred configuration offers some combination of more competitive price, guilt levels, and/or a proportion of favored sustainable attribute levels relative to their highest quantity configuration for virtually all the respondents.

The percentile increase in predicted purchase quantity presented in Fig. 2 is based on relative comparisons between the baseline quantity prediction using the actual moral licensing and rebound effect predictor variable gaps, and the predicted purchase quantity when gaps 3 and 4 listed in Fig. 1 are reduced by 50% and 100%. Thus Fig. 2 demonstrates what could be achieved when fast fashion brands use their efficiency advantages and marketing/design abilities to close the quantity gap by moving the most preferred B/S/P configuration closer to highest quantity B/S/P configuration with more attractive pricing, branding, styling, and promotion of their sustainable clothing, which in turn increases the predicted purchase quantity for an enhanced version of their preferred configuration. The deviations from the baseline predicted quantity purchase for the preferred B/S/P configuration are therefore calculated by adding the linear regression based (negative) quantity gap value to the conjoint derived highest quantity B/S/P configuration estimate when gaps 3 and 4 are reduced by 50 and 100%. As shown in the Note box of Fig. 2, this predicted quantity gap for the overall sample is −1.4 (-1.8 SC, −0.9 PC, −1.2 EC), which results in an overall sample preferred configuration predicted baseline quantity of 12.3 (11.4 SC, 12.5 PC, 13.4 EC). Thus a 50% reduction in the gap 3 guilt between the respondent's most preferred configuration versus their lowest guilt configuration is predicted to provide a moral licensing induced 4.3% increase in purchase quantity above the preferred configuration quantity baseline (4.5% SC segment, 1.8% EC, 1.7% PC), which for the overall sample equates to 12.8 pieces of clothing vs. the 12.3 baseline while holding other predictor variable gaps constant. Similarly, the implementation of fast fashion efficiencies that reduce gap 4 by 50% between the price of their most preferred configuration and lowest price configuration is predicted to provide a rebound effect induced 2.4% increase in purchase quantity above the baseline estimate (e.g. 12.6 pieces of clothing versus 12.3) for the overall sample while holding other gaps constant (4.6% EC, 3.2% SC, 2.2% PC). Marketer efforts to reduce the guilt and price gaps might also reduce the mostly non-significant preference gaps, and when gaps for all 4 predictors are reduced by 50% the combined rebound and moral self licensing effects lead to a predicted 3.7% (PC) to 9.4% (EC) increase in purchase quantities (6.6% overall; 13.1 pieces of clothing vs. 12.3), while eliminating the predictor variable gaps entirely doubles all the figures ranging from 7.4% (PC) to 18.8% (EC) increases in predicted purchase quantities.

Contrary to the expectations of the pre-study participants, the Fig. 2 results demonstrate that the PC segment is generally least influenced by licensing or rebound effects versus their SC and EC counterparts, which is due to the consistency between their preferred configuration and their lowest guilt and lowest expected price configurations, which means they are less affected by marketing mixes involving sustainability related guilt reductions or resource use efficiencies. In contrast, the SC and EC

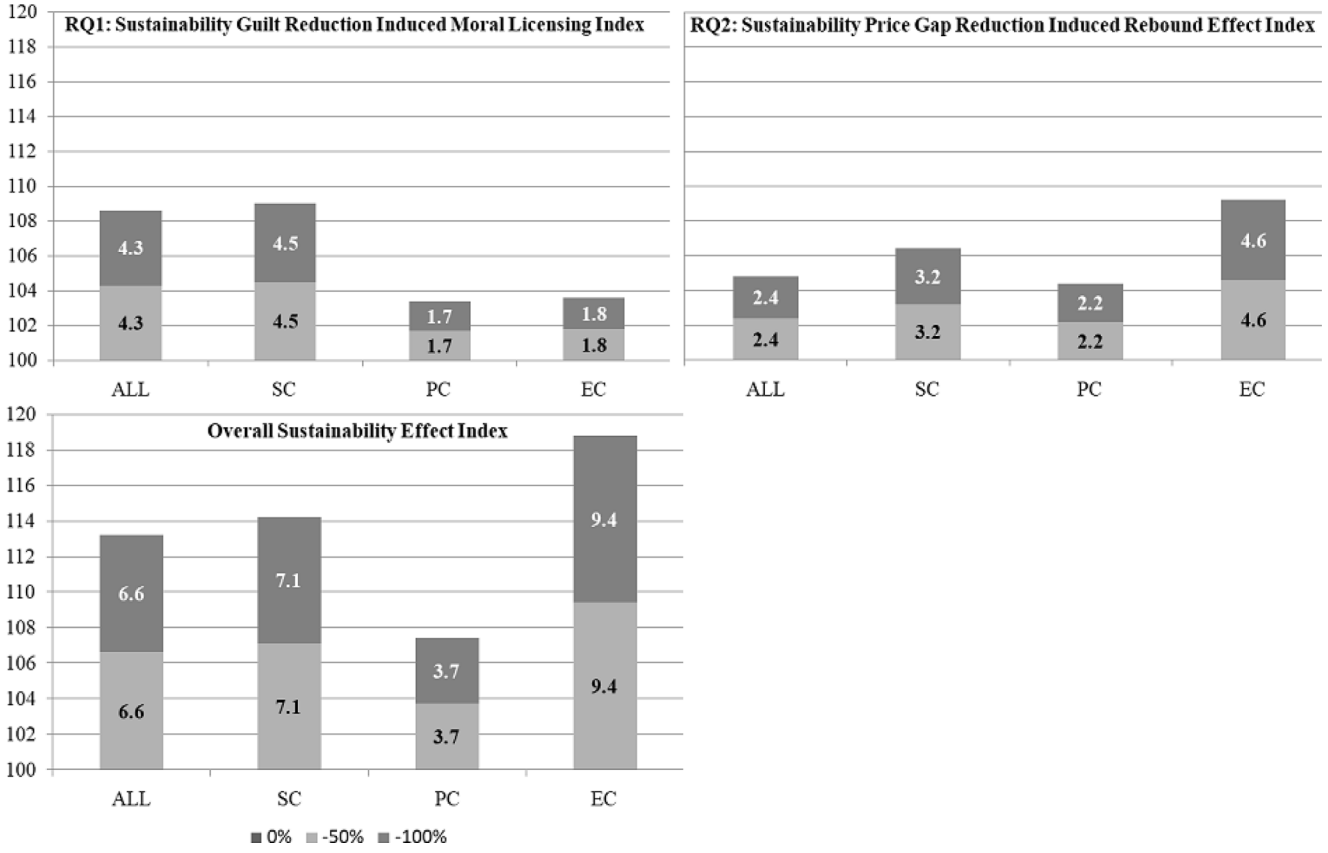

Fig. 2. Predicted Moral Licensing and Rebound Effects. **Note:** Index value of 100 = 0% baseline clothing quantity prediction from gap models = (Highest Quantity B/S/P configuration quantity score + gap model quantity gap score). Predicted quantity gaps are: -1.4 overall, -1.8 Style Conscious (SC), -0.9 Price Conscious (PC), -1.2 Eco-Conscious (EC). The resulting Baseline Quantity is 12.3 overall, 11.4 SC, 12.5 PC, 13.4 EC. -50% value = percentile increase in quantity with a 50% reduction in guilt gap (RQ1) or price gap (RQ2), or overall combined gaps. -100% value = percentile increase in quantity with complete elimination of respective gaps.

segments do recognize their preferred configurations often include less sustainable and/or price increasing elements that induce guilt or economic hardship that can potentially be reduced by more attractive fast fashion brand sustainable marketing mixes, which is reflected by their stronger moral self licensing and rebound effect quantity results.

5. Discussion

The fast fashion industry has been very innovative and successful in creating design, manufacturing, and retail systems that are very efficient at profitably delivering the latest fashions at affordable prices, and the largest buyers of fast fashion generally like these innovations because they allow frequent and affordable changes to their looks using styles they admire, which are fashion habits that have previously been available only to the wealthy. Yet this democratization of fashion choice has also been widely criticized as unsustainable, and the fast fashion industry has responded with sustainability initiatives that include more sustainably produced clothing lines that reflect increased operating efficiencies, reduced waste/emissions, and promotions that educate consumers about sustainable consumption options (Chan and Wong 2012; DeBritto et al. 2008; Ekstrom and Salomonson 2014; Han et al. 2016; Laitala and Klepp 2013; Park and Lin 2020; Sorescu et al. 2011). Reviews of the fashion and environmental literature, however, reveal little empirical effort to measure the sustainability impact of these fast fashion initiatives, and the current study contributes by addressing this gap in the literature. The results show that fashion buyers are often aware of these industry sustainability efforts, but that sustainable marketing mixes are likely to generate significant moral self licensing and rebound effects by reducing consumer guilt and/or the cost of buying sustainably produced products and hence provide both shopping/clothes loving and environmentally sensitive segments a license and economic means to purchase more clothes. A further contribution of the current study comes from the demonstration of purchase quantity based rebound effects as a potential additional paradoxical effect to the more common product usage intensity/frequency impact of efficiency based rebound effects.

It should be noted here that a limitation of this study is the use of data derived from the young Norwegian female respondent's self-reported interests and perceptions regarding the presented conjoint model attribute levels and background variables, which might be subject to errors and biases in comparison to actual behavioral data or data from other geographic locations or segments. Yet the moral self licensing and rebound effect predictions of increased purchase quantities presented in Fig. 2 do provide at least a partial explanation for the large increase in fast fashion sales that have coincided with the implementation of ever more 'sustainable' marketing mixes over the past 20+ years, which suggests the current results correspond with and are validated by real world clothing sales/consumption trends.

These paradoxical consequences also suggest that fast fashion sustainability strategies could be profit enhancing, but not in the ways suggested in most sustainability literature. Previous scholarship has used anecdotal and limited empirical evidence to promote sustainable strategies and products as a means of increasing profits by reducing costs due to more efficient manufacturing and distribution (Porter and van der Linde 1995), or because of the willingness of consumers to pay higher prices for more sustainably produced products (Trudel and Cotte 2009), or by gaining a competitive advantage and taking share from less sustainable competitors (Jung et al. 2020; Ko et al. 2013; Unruh and Ettenson 2010). In contrast, there has been very little examination of the degree to which sustainability efforts might lead to higher industry sales (Olson, 2022; Pedersen, Gwozdz, & Hvass, 2018; Phipps et al., 2013), and the current findings suggest that the environmental benefits of sustainability strategies designed to raise profits via efficiency related lower operating costs or increased market share could be offset by paradoxically increasing the total quantity of products manufactured, shipped, retailed, consumed, and disposed of with additional resources utilized and emissions generated at each stage. Fast fashion sales and profits that increase from not only traditional growth oriented marketing innovations but also because of sustainability efforts might therefore entice non-fast fashion brands to adopt fast fashion innovations, which could further increase clothing sales with potentially detrimental sustainability outcomes.

Future research should therefore not only consider the intended or hoped for consequences of sustainability efforts in terms of greater efficiencies, greener processes/raw materials, and positive social justice outcomes, but also unintended consequences such as rebound or moral self licensing effects that result from efficiency based lower operating costs and less purchase related guilt and consequent greater consumption. Even in cases where direct moral self licensing or rebound effects are found to be small or non-significant (e.g. Davis 2008; Juhl et al. 2017), rising global resource use would suggest that research efforts should also be made to identify indirect rebound and moral self licensing effects where the efficiency and guilt reducing efforts of marketers might lead to greater resource use and emissions in unrelated consumption activities (Mazar and Zhong 2010; Michaels 2012; Phipps et al. 2013).

6. Conclusion

Research and practice finds that many widely promoted 'sustainable' technologies, products and behaviors such as electrified vehicles, renewable energy, organic foods, and trash recycling incur a variety of paradoxical outcomes that frequently makes them less sustainable and/or more costly than promised (Darwall 2018; Kinnaman 2010; Lomborg 2013; Messenger 2018; Olson 2013b, 2015, 2017; Schmidt et al. 2017; Semuels 2019; Seufert et al. 2012; Shellenberger 2018; Shriver 2018; Tierney 2015). Similarly, many widely promoted sustainability practices within the fashion industry, such as used clothing recycling and the increased use of organic and natural textiles have also been found to suffer from high costs and uncertain environmental benefits that might lead to unintended negative economic or sustainability outcomes beyond the moral licensing and rebound effects studied here (Bain 2017; Ekstrom and Salomonson 2014; Ross 2017). Unfortunately literature reviews typically find little scholarly interest in understanding or measuring the potentially negative environmental or economic implications of industry and consumer responses to sustainability related tradeoffs in not only fashion research (e.g. Thorisdottir and Johannsdottir 2019; Yang et al. 2017), but also in sustainability and environmental research more generally (e.g. Baumann, Boons, & Bragd, 2002; Cronin, Smith, Gleim, Ramirez, & Martinez, 2011; E. Olson L., 2022; E.L. Olson, 2013a; Phipps et al., 2013). Marketing scholars should therefore be encouraged to put more conceptual and empirical effort into understanding why 50+ years of sustainability and green marketing efforts have generally not been as successful as hoped, which is likely to include more concern about calculating the net economic costs and the environmental impact of sustainability initiatives after accounting for possible reversals or unintended negative consequences. More accurate understanding and determination of the net effects of 'sustainable' marketing mixes will not only increase the validity and real world relevance of marketing contributions to sustainability scholarship and practice, but hopefully also help reduce the paradoxical consequences of good intentions.

CRediT authorship contribution statement

Erik L. Olson: Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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