

PEER-REVIEWED PAPER

Cross cultural exploration of clothing repurposing behaviors and motivations from South Africa and the United Kingdom

Michelle Burton Kent State University, Ohio, USA

Kim Hahn Kent State University, Ohio, USA

Abstract

As there is a lack of sufficient studies conducted on what drives people's clothing repurposing behaviors, specifically in both developed and emerging countries, our research aim is to study self-construal to uncover the motivations, social engagements, and sustainability aspects behind these behaviors. Participants were recruited by market-based research firm (Qualtrics) and an online survey was completed by residents of two countries: the United Kingdom (n = 185) and South Africa (n = 185). ANOVA test results indicated most of the motivations and selfconstrual were significantly different between the two countries. Types of individuals and activities they engage in with others (i.e., repurposing communities) were also analyzed and found to be different. This study provides valuable information and warrants further studies about people's motivations, social engagement, and other sustainability related behaviors when repurposing, employing self-construal as a comprehensive framework.

KEY WORDS: GLOBAL MARKETS, CONSUMPTION, SELF CONSTRUAL, REPURPOSING, SUSTAINABILITY

Introduction

The consumer loses approximately \$460 billion annually by wasteful discard actions rather than reuse (Ellen MacArthur Foundation, 2017). However, three options exist when they dispose of their clothing: 1) keep and use to serve original purpose or convert to new purpose (i.e., repurposing or reuse), 2) discard of permanently (i.e., throw away in trash), or 3) temporarily dispose (i.e., loan, rent) (Jacoby et al., 1977). Although these three options exist, keeping and repurposing is critical towards transformation to a circular economy (Geissdoerfer et al., 2017). One common form of repurposing is upcycling, adapting an item seemingly at the end of its life cycle into something of equal or higher value. The popularity of upcycling is gaining momentum as both companies and consumers recognize the need for sustainable options. Companies such as Eileen Fisher, Patagonia, and Re/Done have launched upcycling programs. Still, little is published on how many people globally engage in upcycling activities. Although consumers in markets such as the United Kingdom, a developed market, have shown increased interest in repurposing practices (Deloitte, 2021), some evidence has suggested this isn't the case in

 Burton, M. & Hahn, K. (2023). Cross cultural exploration of clothing repurposing behaviors and motivations from South Africa and the United Kingdom. International Journal of Home Economics, 16(2), 2-17.
 Michelle Burton ⊠ mburto22@kent.edu
 © 2023 International Federation for Home Economics

markets such as South Africa, an emerging market (Park & Lin, 2020). It has been a struggle to encourage consumers to engage in sustainable practices in South Africa for multiple reasons including lack of knowledge and limited interest in sustainability concepts (Hasbullah et al., 2019; Schroeder & Anantharman, 2017). Current sustainability related literature on South Africa is also limited and is only reflective of slow fashion, collaborative apparel, broad sustainability concepts, and eco-friendly apparel. As there is a lack of sufficient comparison studies conducted on this topic, specifically in the United Kingdom and South Africa, our research aim is to provide valuable insights into what drives people's participation to repurpose their clothing. By delving into self-construal, we hope to uncover the motivations behind individuals' engagement in clothing repurposing behaviors in two different markets: South Africa and the United Kingdom. We have selected these two countries for this study to compare markets that represent various levels of economic development and sustainability challenges.

Literature Review

Global Sustainability Challenges - Developed and Emerging Markets

Globally there are over 24 countries defined as emerging markets accounting for 49% of global GDP and 67% of GDP growth in the past decade (2011-2021). Still, research remains limited for these markets. In a systematic literature review of 90 published articles on sustainable consumption and production in developed vs. emerging economies, Wang et al. (2019) identified only 22 with a focus on developing economies. Even within those articles, most (64%) were from India, China, and Turkey.

Rapidly expanding markets, rising consumption levels, increased textile manufacturing, and the customer's need for the latest and greatest fashion products (Kumar & Srivastava, 2020) continue to plague emerging economies further compounding sustainability issues. This is emphasized by the Sustainable Development rankings of the 193 United Nations member states. Member states are ranked on overall progress towards achieving each of the 17 sustainable development goals with a maximum score of 100 indicating all have been achieved. As an example, the United Kingdom, a developed market, scored 81% and is ranked 163. Conversely South Africa, an emerging market, ranks 108 with a score of 64%. Both countries have seen mild improvements of 5-6% since 2000 (United Nations, 2022). However, the variance in scoring and ranking between both emerging and developed markets is substantial enough to warrant additional research on current sustainability practices in these two countries to bridge the gap.

South Africa Consumer Sustainability Practices

Approximately 92% of South Africans believe sustainability is important but only 58% are engaging in sustainable practices. Amongst those engaging in sustainable practices, most are using leftover foods (86%), limiting water consumption (84%), and reusing or mending household items rather than replacing (80%) (van den Bergh, 2022). Though the South African consumer believes sustainability is important, previous research indicates they are more socially conscious of sustainable consumption practices rather than ecologically conscious (Mkhize et al., 2020). Moreover, they are most concerned only with the immediate implications of their apparel consumption behaviors rather than the long term. However, inaction and understanding of both short- and long-term climatic issues in South Africa has far reaching consequences. Over 20,000 South Africans have prematurely died each year as a direct result of air pollution (Winkler et al., 2017). South Africa's carbon intensity, 3.2 times higher than the global average in 2019, also has the potential to reduce ability to compete in international markets and a loss

of 1% of GDP by 2030 because of recently passed legislation (e.g., Carbon Border Adjustment Mechanism) (The World Bank Group, 2022). Climatic changes such as low rainfall, drought conditions, extreme storms, and warming conditions twice the global average are expected to continuously increase in the future (The World Bank Group, 2022). The ability to act on climatic issues mostly impact the poorest households as South Africa has the highest rate of income inequality in the world (The World Bank Group, 2022). The poorest households are typically exposed to weather events, limited in financial resources, and rely on low-quality health services. These seemingly apparent issues in South Africa suggest the need for sustainability practices to benefit the country. However, the most recent environment has signified a behavior change shift as consumer optimism in the economic future of South Africa has slowly declined from 24% (2019) to 21% (2021) (McKinsey Global Surveys, 2021). Higher than the alltime low of 17% (mid-2020), it is still drastically less than other emerging economies namely India (57%), China (48%), and Brazil (31%) (Hattingh & Ramlakan, 2022). Pessimism and the lingering effects of the COVID-19 pandemic are certainly felt by the South African consumers as 87% describe their current situation as 'stretched' (Hattingh & Ramlakan, 2022). Attitudes towards the future of the country and the impact of the pandemic have, in turn, translated to 61% of South African consumers disclosing they will spend less (Hattingh & Ramlakan, 2022). It appears all income levels are impacted as even the most affluent and high-income earners across South Africa are spending 51% less (Hattingh & Ramlakan, 2022). The same situation is true in other emerging markets such as Brazil. However, it still far exceeds both India (48%) and China (45%) (Hattingh & Ramlakan, 2022).

United Kingdom Consumer Sustainability Practices

The United Kingdom consumer also recognizes the importance of a more sustainable lifestyle. In a 2021 sustainability survey, 75% of United Kingdom consumers had either recycled or composted waste, 64% limited single-use plastics, 53% opted to repair an item rather than replace, and 40% bought second-hand or refurbished items (Deloitte, 2021). Furthermore, a third of United Kingdom consumers are engaged in a range of sustainability choices, an increase of 17% pre-pandemic (Deloitte, 2021). Nevertheless, there are growing levels of environmental concern among this consumer group as well. In a United Kingdom public opinion poll (Office for National Statistics, 2021), 75% of participants worried about climate change. Those who were worried about climate change were three times more likely to change their lifestyles. The three biggest issues were future generational concerns, feelings of anxiousness, and the expense of making environmentally friendly changes. Overall, 81% of consumers in the United Kingdom have made changes to their lifestyle to address climate change. This is in stark contrast to only 58% of South African consumers making sustainability focused changes (van den Bergh, 2022) despite a high level of awareness of environmental issues. This signifies a narrower attitudebehavior gap for the United Kingdom consumer vs. the South African consumer. However, this isn't surprising as markets such as the United Kingdom are at the forefront of strategies and practices driving sustainable consumption (Wang et al., 2019).

Self-Construals (SC)

According to Singelis (1994), there are two different types of SC (independent and interdependent) which refers to a collection of thoughts, feelings, and actions regarding one's relationship to others. People with an independent SC are more likely to emphasize personally oriented values, whereas people with an interdependent SC are more likely to emphasize socially oriented values (Kim et al., 2003). Western cultures such as the United Kingdom, the United States and other European countries tend to be individualistic and showcase

independent SC. In contrast, Asia and African cultures are considered collectivistic and tend to be interdependent (Triandis, 1989). In the past, before digital technologies advanced our world with connectivity, inclusion, and accessibility, people in individualistic cultures mostly valued independent SC, whereas people in collectivistic cultures valued interdependent SC (Markus & Kitayama, 1991). However, with the rise of digital technologies, this trend has shifted. Digital technologies have enabled people to connect with others more easily and quickly, regardless of their cultural background. This has led researchers to investigate the self-construction of contemporary people from varying cultures as well as within cultures (Hahn et al., 2013; Hahn & Bhaduri, 2021).

Recent studies demonstrated that people might value either independent or interdependent SC within a given culture and SC can be different depending on different situations and that no distinct differences exist between cultures in terms of SC measures (Harb & Smith, 2008; Krishna et al., 2008; Park & Ahn, 2008). When Hahn et al. (2013) explored different patterns and reasons for textile-making between three generations in South Korea (non-Western and traditionally a collectivistic culture), they found that the younger Korean adults in their study had a higher independent SC than the middle- and older-aged Korean women, and younger generations were more likely to engage in textile-making as a creative endeavor. Hahn & Bhaduri (2021) investigated reasons for people to make masks during the COVID-19 outbreak and found out that SC for mask-makers versus non-mask-makers differed across three countries, the United States, India, and China. Their results showed that interdependent SC was highest for mask-makers in India and much lower for non-mask-makers in the United States.

Although SC can vary by situation, which determines how a person behaves and experiences an event or activity (Kwang, 2005), people with higher independent SC tend to be more sensitive and responsive to activities that emphasize their personal roles, feelings, and thoughts and such sensitivity can sometimes have a positive influence on creative behavior (Kim & Markus, 1999; Kwang, 2005). On the other hand, people with higher interdependent SC are more accustomed to activities revolving around social interactions and collective activities (Wang & Ross, 2005). Although researchers have not specifically examined the relation between SC and repurposing clothing behavior, Schofield-Tomschin and Littrell (2001) found that craft-making processes provide identity, therapy, and creativity to individual crafters and that their association with a craft social group such as a sewing guild provide them with learning, sharing, motivation, and identity formation opportunities. They also identified that craft-making enables makers to gain self-actualization and achieve personal goals and needs.

Although studies of SC and sustainable behavior in emerging markets such as South Africa are limited, there are a few studies that addressed consumers' sustainable behavior and preferences comparing developed and emerging markets. Dermody et.al. (2018) investigated and compared the influence of pro-environmental self-identity on sustainable consumption buying and curtailment in emerging markets and found some differences between China and Poland. In a cross-cultural study of exclusive online targeted promotions and consumer preferences between Dutch and Mexican consumers, Broeder & Derksen (2018) found Mexicans are more susceptible to exclusive offers than Dutch consumers. Malik et. al. (2020) discovered interdependent and independent self-traits significantly affect consumers' counterfeit consumption in emerging markets. As there are not enough studies conducted to find out how SC is connected to repurposing clothing behavior in developed and emerging countries, by

exploring independent and interdependent SC in the current study, we hope to gain valuable information about the differences and similarities between the United Kingdom and South Africa.

Self-construal can also provide valuable insights into how, and why, repurposing clothing behaviors can build communities of individuals that seek to learn and share from others with common goals. Burton and Eike (2023) suggested social media as a digital platform to deliver educational content that can be shared to encourage and teach clothing repurposing behaviors. As mentioned previously, digital technologies are on the rise globally, with an estimated 5.2 billion Internet users, 65% of the world's population. Of the estimated 5.2 billion, 60% were social media users (Petrosyan, 2023). Millennial women especially seek to benefit from educational training via social media as they are more inclined to use at least one social media channel vs. men - 78% of women vs. 66% men (Auxier & Anderson, 2021). Therefore, understanding variations and similarities in behaviors amongst two unique markets is of utmost importance. As such, we propose the following research questions. RQ1) How are self-construals of those who repurpose their garments different between the United Kingdom and South Africa?; RQ2) How are the motivations of those who repurposing communities different between the United Kingdom and South Africa?

Methods

Study Design and Participant Selection

An online survey was conducted, and our study participants were recruited by a market-based research firm (Qualtrics). The survey was distributed in December 2022 to participants who resided in one of two countries: the United Kingdom and South Africa. The two countries were selected for two reasons. First, as culture influences individuals' perceptions of SC (DeAndrea et al., 2010), it was necessary to identify countries that portray diverse cultures. Traditionally and previous studies showed South Africa represents a collectivist culture and the United Kingdom represents an individualist culture (Kim & Markus, 1999). Second, these two countries represent different statuses of sustainable practices and economic development levels as mentioned in the literature review. Within each country, a quota was imposed to get equal numbers of participants who repurposed their apparel items. No other restriction was placed on participant recruitment criteria. The surveys were administered in English for both countries.

Measures

Reasons for repurposing were measured using fifteen items, on a 5-point rating scale (1: Not at all important, 5: Extremely important), adapted from Collier's (2011) study on reasons for making textile handcrafts. Various questions related to participants' experience with repurposing their apparel items were measured. These included how they learn to repurpose apparel, how they feel when they use repurposed items, what percentage of their repurposed items are functional vs non-functional, and what they make with their repurposed items. Questions related to repurposing communities such as what type of individuals/repurposing communities they interact with, what motivates participants to engage with those repurposing communities, what type of activities they do to engage others were asked. Self-construal was measured using 23 items (Singelis, 1994) on a 7-point Likert type scale (1: Strongly Disagree, 7: Strongly Agree). Twelve of the items measured interdependent SC, while the remaining 11 items measured independent SC. Finally, sustainability behavior was measured using nine items

on a 5-point Likert type scale (1: Strongly Disagree, 5: Strongly Agree). See Table 1 for scale items.

Table 1	Measures used for the study						
Self-Construal (Singelis, 1994) (7-point Likert scale)							
I have respect for the authority figures with whom I interact. [T]							
It is importa	It is important for me to maintain harmony within my group(s). [T]						
My happine	My happiness depends on the happiness of those around me. [T]						
I will sacrif	I will sacrifice my self-interest for the benefit of my group(s). [T]						
I would offe	I would offer my seat in a bus to an older person. D						
I respect people who are modest about themselves. [T]							
I often have the feeling that my relationships with others are more important than my own accomplishments. [T]							
It is importa	It is important to me to respect decisions made by my group(s). [T]						
I will stay ii	n group(s) if they need me, even wher	I'm not happy with the group(s). [T]					
If my broth	er, sister, or child fails at something,	I feel responsible. [T]					
I should tak	I should take into consideration my groups' advice when making decisions about my future. [T]						
Even when	I strongly disagree with my group('s) n	nembers, I avoid an argument. [T]					
I'd rather sa	y "No" directly, than risk being misun	derstood. [I]					
[]	ortable using someone's first name soo	n after I meet them, even when they are much older than I am.					
l prefer to l	be direct and forthright when dealing	with people I've just met. [I]					
l enjoy beir	g unique and different from others in	many respects. [I]					
My persona	identity independent of others is ver	y important to me. [I]					
Speaking up during a class or a public setting is not a problem for me. [I]							
Having a liv	Having a lively imagination is important to me. [I]						
I am comfo	table with being singled out for prais	e or rewards. [I]					
I act the same way no matter who I am with. [I]							
I am the same person at nome that I am at work. [I]							
Deing able to take care of myself is a primary concern for me. [1]							
Motivations	s for repurposing (Coller, 2011; Irick	, 2013; Martindale, 2017; Author, 2022) (5-point Likert scale)					
Make perso	Make personal connections with others Lack of satisfying designs in stores						
Positively c	hanges my mood/self-care	Allows me to change the fit of the item					
l can't affo	rd to buy new	I believe in consuming less as much as possible					
l enjoy mak	ing things for others	Allows for recognition of my work					
l enjoy the	process	Alternate source of income					
Expressing	ndividuality	Creative outlet					
Change in s	tyle	Allows me to share and teach others on social media platforms					
Repurposing community							
What individuals/repurposing communities have you interacted with who practice these behaviors?							

- 1. Friends/Family
- 2. Social media platforms (Facebook, TikTok, YouTube)
- 3. Local groups
- 4. Repair cafes
- 5. Online groups (e.g. textile and crafts)
- 6. Professional/Social organizations
- 7. Feeling afraid as if something awful might happen

Table 1 (cont).

What motivated	you to engage with	these repurposing	communities or individuals?
----------------	--------------------	-------------------	-----------------------------

- 1. Share my work with others to teach skills
- 2. Find/connect with others who have the same experience level
- 3. Learn new skills
- 4. Learn new patterns and designs
- 5. Gain inspiration
- 6. Meet new friends

What will you do to engage others in these behaviors?

- 1. Teach others how to sew or sewing related techniques in formal or informal settings
- 2. Share personal repurposing projects or other related thoughts/ideas
- 3. Donate sewing related resources (e.g., sewing machines, needle and thread, fabric)
- 4. Publish books/articles on various topics Start podcast

Sustainable behavior (Collier & Wayment, 2018)(5-point Likert scale)

- 1. I recycle more
- 2. I Look for free items
- 3. I engage with groups using similar processes using digital platforms (e.g. Facebook, Instagram, WeChat, Pinterest)
- 4. I only shop based on need
- 5. I participate in neighborhood swaps
- 6. I purchase a secondhand
- 7. I buy eco-friendly products only
- 8. I buy eco-friendly products sometimes
- 9. I only buy based on need

Data Analysis

Descriptive analyses of the study data were conducted to examine participant demographics and participants' reasons and motivations for repurposing apparel items. Principal component analysis (PCA) was conducted to determine the underlying dimensions of participants' SC. To answer our research questions, multiple one-way ANOVAs were conducted to understand the differences (if any) in reasons and motivations for repurposing apparel items and participants' SC between the two countries (U.K./S.A.).

Results

Participant Characteristics

Our data was collected from a total of 370 participants who have repurposed apparel items including 185 United Kingdom participants and 185 South African participants. See Table 2 for detailed demographic information of the participants from the two countries. The participants' ages ranged from 18 to 79 and the average age was 38 years old. Our participants' gender included 248 female (130 U.K. and 118 S.A.), 121 male (54 U.K and 67 S.A.), and one other gender (U.K.). Our participants' ethnicity varied between the two countries. Most South African participants were Black or African American (N = 122, 65.9%) followed by White/Caucasian (N = 29, 15.7%), Asian (N = 13, .07%), and other (N = 20, 10.8%). Most of the U.K. participants were White/Caucasian (N = 5, .03%). Most of our participants were either single/never married (N = 142, 38.4%) or married/have a life partner (N = 156, 42.2%) and have a full-time job (N = 205, 55.4%) with most of South African participants having a full-time job (n = 126,

68.1%) and the U.K. participants' job status varied with those with full time job (79, 42.7%), Part-time (N = 42, 22.7%), and not employed (N = 35, 18.9%).

Variable	Levels	South	Africa	United Kingdom		
		F	%	F	%	
Age	18-20	7	3.8%	18	9.7%	
	21-30	90	48.6%	41	22.2%	
	31-40	61	33.0%	59	31.9%	
	41-50	19	10.3%	29	15.7%	
	51-60	14	7.6%	17	9.2%	
	61 and over	5	0.3%	21	11.4%	
Gender	Male	67	36.2%	54	29.2%	
	Female	118	63.8%	130	70.3%	
	Other			1	0.5%	
Ethnicity*	Asian	13	0.7%	21	11.4%	
-	Black or African-American	122	65.9%	5	2.7%	
	Latino or Hispanic	1	0.5%	0		
	White Caucasian	29	15.7%	149	80.5%	
	Other	20	10.8%	8	0.4%	
Education	Less than high school	1	0.5%	2	1.1%	
	High school/GED	36	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	41	22.2%	
	2- year college degree	11	5.9%	36	19.5%	
	Some college	32	17.3%	36	19.5%	
	4- year college degree	82	44.3%	40	21.6%	
	Master's degree	16	8.6%	23	12.4%	
	Doctoral or Professional degree	7	3.8%	7	3.8%	
Marital Status	Divorced	6	3.2%	12	6.5%	
	Living with partner	19	10.3%	24	13.0%	
	Married or life partner	77	41.6%	79	42.7%	
	Separated	0		4	2.2%	
	Single-never married	81	43.8%	61	33.0%	
	Widowed	2	1.1%	5	2.7%	

 Table 2
 Demographic characteristics of participants

(South Africa: n = 185; United Kingdom: n = 185)

Self-Construal

Principal component analysis (PCA) was conducted to determine the underlying dimensions of participants' reasons for SC and revealed two factors (43.6 % of total variance explained). Three items from interdependent and two items from independent scales were deleted due to low factor loading (factor loadings: 0.12 to 0.19). Of the remaining items, 9 loaded on interdependent SC (factor loadings: 0.78 to 0.30), and 9 items loaded on independent SC (factor loadings: 0.74 to 0.36). High loading items were computed as a new variable and used to compare SC between two countries and how they correlate with reasons and motivations for repurposing apparel items. See Table 3 for measures used in this study and specific items that are loaded on each factor.

To answer research question 1 (how are self-construals of those who repurpose their garments different among people from two countries, U.K. and S.A.), ANOVA test was conducted. There were no significant differences in interdependent (F [1, 368] = 3.567, p < 0.060) SC, but significant differences were found in independent (F [1, 368] = 69.08, p < 0.001) SC between two countries. Independent SC was higher for S.A. participants (mean = 5.59, S.D. = 0.82) compared to the U.K. participants (mean = 4.87, S.D. = 1.05). Although there wasn't a significant difference between two countries, Interdependent SC was also slightly higher for S.A. participants (mean = 4.99, S.D. = 1.07) compared to the U. K. participants (mean = 4.77, S.D. = 1.14).

Motivations to Repurpose

To answer research question 2 (how are motivations of those who repurpose their garments different among people from two countries?), ANOVA test was conducted. Results indicated most of the motivations were significantly different between two countries with S.A. participants scoring higher than U.K. participants except on one item, "I can't afford to buy new", U.K. participants (mean = 3.16, S.D = 1.19) scored higher than S.A. participants (mean = 2.83, S.D. = 1.18) which was significantly different (p = 0.009). Three other items, "lack of satisfying designs in stores", "I like to reuse and recycle", and "I believe in consuming less as much as possible" were not significantly different between the two countries. For other motivation items, S.A. participants' mean scores (average mean = 3.87, S.D. = .57) were significantly higher (F [1, 368] = 88.43, p < 0.001) than the U.K. participants (average mean = 3.18, S.D. = .81). See Table 3 for more details.

Repurposing Communities

To answer research questions 3, we analyzed what type of individuals/repurposing communities participants interacted with those who practice repurposing apparel items, participants' motivations to engage with other communities or individuals, and what type of activities they engage in with others. Most of our participants (N = 291, 78.64%) interacted with friends/family but there were some significant differences found between two groups of participants from South Africa and the United Kingdom. More than one third of United Kingdom participants mainly interacted with friends/family (N = 72, 38.92%) not indicating other online communities. On the other hand, large numbers of South African participants indicated that they interacted not only with friends/family but also with online communities such as TikTok (N = 109, 58.9%) and YouTube (N = 105, 56.8 %) compared to United Kingdom participants who indicated TikTok (N = 69, 37.3%) and YouTube (N = 58, 31.4%). Motivations for engaging with repurposing communities/individuals were also significantly different between the two groups of participants. Overall, both groups of participants engaged with others mainly to "Learn new skills" (N = 281, 75.7%) as well as "Gain Inspiration" (N = 215, 58.1%), however there were some significant differences found between the participants from two countries. More S.A. participants engage with others to "Learn new patterns and design" (N = 108, 58.4%) compared to the United Kingdom participants (N = 52, 28.1 %) and significantly more South Africans engage with others to "Share my work with others to teach skills" (N = 101, 54.6%) compared to the United Kingdom participants (N = 37, 20%). Most of the participants engaged with others to "Share personal repurposing projects or other related thoughts/ideas" (N = 266, 71.9%) and "Teach others how to sew or sewing related techniques in formal or informal settings" (N =186, 50.3%). Some of the activities were significantly different between two groups of participants with significantly more South African participants "Sharing personal repurposing projects or other related thoughts/ideas" (N = 146, 79.3%) compared to the U.K. participants (N = 120, 64.9%). More South African participants "Teach others how to sew or sewing related techniques in formal or informal setting" (N = 119, 64.3%) compared to the United Kingdom participants (N = 67, 36.2%). More South African participants also "Donate sewing related

resources (e.g., sewing machines, needle and thread, fabric)" (N = 85, 45.9%) compared to the United Kingdom participants (N = 53, 28.6%).

Repurposing Experience

When participants were asked how much of their wardrobe they had repurposed, there was a significant difference between the two groups of participants from South Africa and United Kingdom [X^2 (3, N = 270) = 21.27, p < .001]. Most of our study participants have repurposed less than 50% of their wardrobe but 47 % of (N = 87) United Kingdom participants repurposed less than 25% of their wardrobe compared to the South African participants at 25.5% (N = 47). On the other hand, about 52.5% (N = 97) of South Africans repurposed 26-50% of their wardrobe compared to the United Kingdom participants at 42.1% (N = 78). More South African participants (22.1%, N = 41) repurposed more than 50% of their wardrobe compared to the United Kingdom participants (10.8 %, N = 20) as well. When asked what percentage of participants' repurposed items are functional vs non-functional, although there was no significant difference between the two countries, participants from both countries repurposed more functional items. United Kingdom participants repurposed slightly higher numbers of functional items (S. Africa mean =68.31%, U.K. mean = 71.08 %) than non-functional items (S. Africa mean = 31.69%, U.K. mean = 28.92 %) compared to South African participants. Most of our participants felt a "Sense of achievement" (N = 229, 61.9%) and "Happiness" (N = 187, 50.5%) when they used their repurposed items and there were some significant differences found between two groups of participants. More S.A. participants felt "Excited" (N = 108, 58.4%), "Happiness" (N = 107, 57.8%), and "Unique" (N = 101, 54.6%), compared to the United Kingdom participants who felt "Excited" (N = 56, 30.3%), "Happiness" (N = 79, 42.7%), and "Unique" (N = 64, 34.6%). However, more U.K. participants felt a "Sense of achievement" (N = 125, 67.6%) compared to South African participants (N = 104, 56.2%).

When asked how participants learned to repurpose apparel, most participants indicated "Formal Education" (N = 216, 58.4%), "Family member" (N = 191, 51.6%), and "Friends" (N = 160, 43.2%), however the answers were significantly different between the two groups of participants. Significantly more South African participants learned to repurpose apparel from "Formal Education" (N = 129, 69.7%) and "YouTube" (N = 108, 58.4%) compared to the U.K. participants who learned from "Formal Education" (N = 87, 47%) and "YouTube" (N = 86, 46.5%). Slightly more United Kingdom participants learned from "Family members" (N = 99, 53.5%) compared to South African participants indicated "Surprise" (N = 176, 47.6%) and "Create conversation about the item" (N = 159, 43%). Overall, South African participants indicated higher numbers of responses for each item except one item, "Like interesting patterns/designs" the United Kingdom participants (N = 74, 40%) had higher responses than South African participants (N = 64, 34.6%)

Most of our participants make "Wearable items" when asked what they make with their repurposed items (N = 302, 81.6%), followed by "General household items (e.g., rugs, curtain, bed coverings) (N = 232, 62.7%). There weren't many differences between two groups of participants but South Africans made slightly more "Wearable items" (N= 154, 83.2%) compared to the United Kingdom participants (N = 148, 80%) and the United Kingdom participants made slightly more "Materials that can be used for transportation (e.g., nets, kites)" (N = 44, 23.8%) compared to South African participants (N = 39, 21%). Overall South African participants made more of each item.

Sustainable Behavior

When sustainable behavior of the participants from two countries were compared using ANOVA test, there was no significant difference between two groups, except three items, "I engage with groups using similar processes using digital platforms (e.g. Facebook, Instagram, WeChat,

Pinterest)" [S.A. (mean = 4.27, S.D. = 0.92); U.K. (mean = 3.46, S.D. = 1.17), p < 0.001], "I participate in neighborhood swaps" [S.A. (mean = 3.23, S.D. = 1.13); U.K. (mean = 2.62, S.D. = 1.25), and "I buy eco-friendly products only" S.A. (mean = 3.65, S.D. = 1.01); U.K. (mean = 3.15, S.D. = 1.09, p < 0.001]. For all three items South African participants mean scores were significantly higher than United Kingdom participants. See Table 3 for more details.

Dependent Variable	Country	Mean	S.D.	F	Sig.
Self Construals					
Interdependent Self-construal	South Africa	4.99	1.067	3.567	.060
	United Kingdom	4.77	1.14		
Independent Self-construal	South Africa	5.53	5.53	43.005	<.001
	United Kingdom	4.88	4.88		
Sustainable behavior					
I recycle more.	South Africa	4.45	0.84	0.097	0.755
	United Kingdom	4.48	0.828		
I Look for free items.	South Africa	3.88	1.03		
	United Kingdom	3.91	1.057	0.062	0.803
I engage with groups using similar processes using	South Africa	4.27	0.916	48.184	<.001
digital platforms (e.g. Facebook, Instagram, WeChat, Pinterest).	United Kingdom	3.46	1.298		
I only shop based on need.	South Africa	3.94	1.116	2.523	0.113
	United Kingdom	3.75	1.11		
I participate in neighborhood swaps.	South Africa	3.23	1.226	22.122	<.001
	United Kingdom	2.62	1.25		
I purchase secondhand.	South Africa	3.86	1.129	1.813	0.179
	United Kingdom	4.02	1.111		
I buy eco-friendly products only.	South Africa	3.65	1.01	22.122	<.001
	United Kingdom	3.15	1.098		
I buy eco-friendly products sometimes.	South Africa	3.84	1.008		
	United Kingdom	3.82	0.92	1.813	0.179
I only buy based on need.	South Africa	3.89	1.184	1.371	0.242
	United Kingdom	3.75	1.124		
Motivations					
Make personal connections with others	South Africa	3.89	.914	57.514	<.001
	United Kingdom	3.03	1.253		
Lack of satisfying designs in stores	South Africa	3.35	1.073	4.511	.034
	United Kingdom	3.10	1.130		
Positively changes my mood/self-care	South Africa	4.01	.932	19.164	<.001
	United Kingdom	3.55	1.103		
I like to reuse and recycle	South Africa	4.15	.997	5.626	.018
	United Kingdom	3.88	1.145		
Allows me to change the fit of the item	South Africa	4.03	.865	26.432	<.001
	United Kingdom	3.51	1.084		

Table 3 ANOVA Group means for self-construal, sustainable behavior

Dependent Variable	Country	Mean	S.D.	F	Sig.
I can't afford to buy new	South Africa	2.83	1.179	6.963	.009
	United Kingdom	3.16	1.185		
I believe in consuming less as much as possible	South Africa	3.74	1.031	1.209	.272
	United Kingdom	3.62	1.141		
l enjoy making things for others	South Africa	4.03	.958	47.354	<.001
	United Kingdom	3.28	1.135		
Allows for recognition of my work	South Africa	3.87	1.013	45.196	<.001
	United Kingdom	3.09	1.206		
I enjoy the process	South Africa	4.23	.784	57.197	<.001
	United Kingdom	3.44	1.183		
Alternate source of income	South Africa	3.90	1.066	41.518	<.001
	United Kingdom	3.11	1.265		
Expressing individuality	South Africa	4.18	.863	52.079	<.001
	United Kingdom	3.39	1.211		
Creative outlet	South Africa	4.10	.795	48.516	<.001
	United Kingdom	3.35	1.221		
Change in style	South Africa	3.99	.921	47.761	<.001
	United Kingdom	3.26	.081		
Allows me to share and teach others on social	South Africa	3.74	1.508	89.441	<.001
media platforms (e.g., TikTok, Instagram, Facebook, Pinterest) (Normative)	United Kingdom	2.54	1.365		

Discussion and Implications

This research investigated motivations of people who repurpose apparel items from two different countries, the United Kingdom and South Africa. The goal of this research was to gain valuable information about those who engage in repurposing clothing behavior from two different countries by exploring their repurposing reasons, motivations, social engagement, and other sustainable behaviors. It also looked at how two groups of people from two different countries differed in terms of their SC and motivations for engaging in a repurposing community, what they make, and what type of activities they engage in with others who repurpose apparel items. The results showed that self-construals of those who repurpose their garments were not much different among people from two countries, the United Kingdom and South Africa. There were no significant differences found in interdependent SC but independence was slightly higher for South African participants compared to the United Kingdom participants. Although it wasn't significant, this is somewhat consistent with previous studies that unlike Western countries, African cultures are considered collectivistic and tend to be interdependent (Markus & Kitayama, 1991; Triandis, 1989). As expected with the contemporary rise of digital technologies and globalization, our study results showed that Independent SC was higher for South African participants compared to the United Kingdom participants. This result is consistent with recent studies that showed young people from collective cultures tend to have higher Independent SC (Hahn & Bhaduri, 2021; Hahn et al., 2013) and emphasize their personal roles, feelings, and thoughts which can sometimes have an influence on creative behavior (Kim & Markus, 1999; Kwang, 2005). It is also worth noting that the number of South African participants who were between 21 and 30 years old (N = 90, 48.6%) were slightly higher than the same age group from the U.K. (N = 41, 22.2%) and the average age of South African participants was 34.2 which was significantly lower than the United

Kingdom participants at 39.5 (Table 2). Overall, the results of our study demonstrated that people might present either independent or interdependent SC within one culture based on different situations as well as generations and no distinct differences exist between Individualistic and Collective cultures in terms of SC measures (Harb & Smith, 2008; Krishna et al., 2008; Park & Ahn, 2008).

Under motivations to repurpose, South Africans scored significantly higher on 'Making personal connections' and 'Allows me to share and teach others on social media platforms (e.g., TikTok, Instagram, Facebook, Pinterest)'. In addition, South African participants scored significantly higher than United Kingdom participants on the following items under sustainable behavior: "I engage with groups using similar processes using digital platforms (e.g. Facebook, Instagram, WeChat, Pinterest), "I participate in neighborhood swaps", and "I buy eco-friendly products only". These results indicate the ever-increasing importance of social media in the content of exchange, including repurposing practices which are consistent with Burton and Eike's (2023) findings on millennial women's clothing repurposing behaviors. Out of an estimated population of 60 million South Africans, 43 million (72%) use the Internet and 26 million (43%) south African users and TikTok had 12 million (20%) (Kemp, 2023). Although TikTok had less users than other platforms such as Facebook (22 million), it has a reach of almost 30% of the total South African population and had the largest increase from the previous year at 16% (Kemp, 2023).

These findings also further support the potential for digital platforms to serve as an educational platform promoting clothing repurposing behaviors and techniques with global reach to both emerging and developed markets. In addition, 81% of those aged 30-49 indicate they use social media to educate themselves on a myriad of topics (Auxier & Anderson, 2021). Considering the widespread popularity of social media within this demographic, digital platforms, such as social media, provide a valuable opportunity to educate and inspire people globally to enhance their basic repair skills and engage in more sustainable reuse practices. For instance, these platforms could facilitate the exchange of knowledge, allowing experienced individuals to teach sewing techniques to those less skilled in clothing repair and reuse. This approach serves a dual purpose: firstly, it creates an environment allowing the global transfer of expertise to a wider audience, and secondly, it ensures that individuals with the necessary knowledge can explain proper methods and techniques to those less experienced. Previous research, as indicated by Sanders (2006), has established a direct link between one's skill set and their level of creativity. Fostering digital platforms that deliberately promote positive clothing repurposing behaviors, including repair and reuse have the potential to expand creativity levels and encourage sustainable consumption practices, even among those new to the concept.

Most of our participants reported experiencing a 'Sense of achievement' and 'Happiness' when using their repurposed items. Additionally, a greater number of South African participants expressed feelings of 'Excitement,' 'Happiness,' and a sense of being 'Unique' compared to their counterparts in the United Kingdom. Conversely, a higher portion of United Kingdom participants reported a 'Sense of achievement.' These findings align with Schofield-Tomschin and Littrell's (2001) study, which identified that craft-making fosters self-actualization and positive well-being by helping individuals achieve personal goals and fulfill their happiness.

Participants between the two countries differed in their motivations for repurposing apparel items. Overall, South African participants' mean scores of their motivations were significantly higher than the United Kingdom participants except on one item, "I can't afford to buy new." This result was in stark contrast from what we predicted as South Africa was categorized as an emerging market and the United Kingdom as a developed market. Three other items, "lack of satisfying designs in stores", "I like to reuse and recycle", and "I believe in consuming less as much as possible" were not significantly different between the two countries either. Coupled

with their high usage of digital platform technologies (i.e., social media) and motivations, the South African market is worthy of increased attention to make further contributions to promote repurposing practices and behaviors. Moreover, it might be particularly helpful in encouraging other Generation Z or Millennial consumers from other countries as the average age range in South Africa is 27.5 (Kemp, 2023). Our study results aligned with this data showing the average age of South African participants was significantly lower than the United Kingdom. Other emerging and developed markets might benefit from learning what younger and average consumers are creating and how conceivably to create global repurposing communities from our study.

Limitations and Future Research

Although this study offers valuable insights on motivations for repurposing clothing in emerging and developing markets, there are some limitations that can be addressed in future studies. First, this study only addressed the behavior of consumers in South Africa and the United Kingdom. Future studies might investigate other emerging (e.g., Brazil, Russia, China) and developed (e.g., Canada, Germany, New Zealand) markets for more generalizable results. Secondly, while this study addressed social engagements (i.e., repurposing communities) of those who repurpose their clothing, findings indicate South African participants scored significantly higher on items related to the use of digital media (i.e., social media platforms) to either share their creative projects, teach, or engage with others. Therefore, future studies might examine more closely in what ways these platforms are used and potential viability of social media, or other digital platforms, to increase awareness and behaviors of sustainability related practices in developing markets. Future studies might also explore how Self Construal can explain clothing repurposing behavioral intentions as this study only examined the behavior itself. However, behavioral intentions can more likely lead to pro-environmental behaviors when one has a more positive attitude towards the environment. Finally, both South African and United Kingdom participants felt 'excited', 'happiness', 'unique', and a 'sense of achievement' when using their repurposed items. Therefore, future studies might explore in what ways repurposing activities can improve mental well-being in emerging and developed markets.

Biographies

Michelle Burton, Ph.D. received her B.B.A from the University of Houston (Marketing), M.S. from the University of North Texas (Merchandising), and Ph.D. from Iowa State University (Apparel, Merchandising & Design). She has vast experience in the retail industry in categories including apparel, handbags, shoes, and accessories. Her current research agenda includes the consumer's sustainable consumption behavior (SCB), the impact on well-being, and educational platforms (e.g., digital/social media) encouraging sustainability practices. She also serves in several organizations such as Educators for Socially Responsible Apparel Practices (ESRAP), International Federation of Home Economics (IFHE) and International Textile and Apparel Association (ITAA). Email: mburto22@kent.edu

https://orcid.org/0000-0001-8235-7879

Dr. Kim Hahn, a Professor at Kent State University's School of Fashion, holds degrees from Yonsei University (Seoul, Korea), the University of Nebraska-Lincoln (Master's in Apparel Design and PhD in Apparel Merchandising). Her expertise lies in fashion merchandising and design, with a focus on cultural influences (Asian vs. Western). In addition to her creative scholarship, Dr. Hahn has a strong record of scholarship related to consumer behavior in the apparel industry with new technologies. Her numerous collaborations and publication records are evidenced by her referred research publications in several top journals. **Email**: khahn6@kent.edu

https://orcid.org/0000-0003-1724-8179

References

- Auxier, B.; & Anderson, M. (2021, April 7). Social Media Use in 2021. https://www.pewresearch.org/internet/2021/0 4/07/social-media-use-in-2021/
- Burton, M., & Eike, R. (2023). The sustainabilityconscious consumer: An exploration of the motivations, values, beliefs, and norms guiding garment life extension practices. *Sustainability*, 15(15), 12033. https://doi.org/10.3390/su151512033
- Burton, M. D. (2022). Craft of usership: A qualitative exploration of the consumer's characteristics and decision-making processes leading to extended product life [Doctoral dissertation, lowa State University]. ProQuest Dissertations Publishing.
- Broeder, P., & Derksen, R. (2018). Exclusivity in online targeted promotions: Cross-cultural preferences of consumers. International Journal of Business and Emerging Markets, 10(4), 396-408. https://doi.org/10.1504/IJBEM.2018.095710
- Collier, A. F., & Wayment, H. A. (2018). Psychological benefits of the "maker" or do-it-yourself movement in young adults: A pathway towards subjective well-being. *Journal of Happiness Studies*, 19, 1217-1239. https://doi.org/10.1007/s10902-017-9866-x
- Collier, A. F. (2011). The well-being of women who create with textiles: Implications for art therapy. Art Therapy: Journal of the American Art Therapy Association, 28, 104-112. https://doi.org/10.180/07421656.2011.597025
- DeAndrea, D. C., Shaw, A. S., & Levine, T. R. (2010). Online language: The role of culture in selfexpression and self-construal on Facebook. Journal of language and social psychology, 29(4), 425-442. https://doi.org/10.1177/0261927X10377989
- Deloitte. (2021, April 22). Four out of five U.K. consumers adopt more sustainable lifestyle choices during COVID-19 pandemic. https:// www2.deloitte.com/uk/en/pages/pressreleases/articles/four-out-of-five-ukconsumers-adopt-more-sustainable-lifestylechoices-during-covid-19-pandemic.html
- Dermody, J., Koening-Lewis, N., Zhao, A.L., & Hanmer-Lloyd, S. (2018). Appraising the influence of pro-environmental self-identity on sustainable consumption buying and curtailment in emerging markets: Evidence from China and Poland. Journal of Business Research, 86(2018), 333-343. https://doi.org/10.1016/j.jbusres.2017.09.041
- Ellen MacArthur Foundation. (2017). A new textiles economy: Redesigning fashion's future. https://ellenmacarthurfoundation.org/a-newtextiles-economy
- Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The circular economy-A new sustainability paradigm? *Journal of cleaner production*, *143*, 757-768. https://doi.org/10.1016/j.jclepro.2016.12.048

- Hahn, K. H. Y., Collier, A. F., & Chyu, R. (2013). Resurgence of textile-making in contemporary Korean culture: Intergenerational differences. *Clothing and Textiles Research Journal*, *31*(4), 215-230.
 - https://doi.org/10.1177/0887302X13495733
- Hahn, K.H.Y. & Bhaduri, G. (2021). Mask Up: Exploring cross-cultural influences on maskmaking behavior during the Covid-19 pandemic. *Clothing and Textiles Research Journal*, 39(4), 297-313. https://doi.org/10.1177/0887302X211012747
- Harb, C., & Smith, P. (2008). Self-construals across cultures: Beyond independence interdependence. Journal of Cross-Cultural Psychology, 39(2), 178-197. https://doi.org/10.1177/0022022107313861
- Hasbullah, N.N.; Sulaiman, Z.; Mas'od, A. Factors affecting sustainable apparel consumption in emerging countries: A Systematic Literature Review. *Preprints* 2019, 2019080015. https://doi.org/10.20944/preprints201908.0015 .v1
- Hattingh, D., & Ramlakan, S. (2022). Stretched South African consumers put health and sustainability on the shopping list: McKinsey 2022 Consumer Sentiment Survey. https://www.mckinsey.com/za/ourinsights/stretched-south-african-consumersput-health-and-sustainability-on-the-shoppinglist
- Irick, E. (2013). Examination of the design process of repurposed apparel and accessories: An application of diffusion of innovations theory [Dissertation, Oklahoma State University]. ProQuest Dissertations Publishing.
- Jacoby, J., Berning, C. K., & Dietvorst, T. F. (1977). What about disposition? *Journal of Marketing*, 41(2), 22-28. https://doi.org/10.2307/1250630
- Kemp, S. (2023, February 13). Digital 2023: South Africa. https://datareportal.com/reports/digital-2023south-africa
- Kim, Y., Kasser, T., & Lee, H. (2003). Self-concept, aspirations, and well-being in South Korea and the United States. *Journal of Social Psychology*, 143, 277-290. https://doi.org/10.1080/00224540309598445
- Kim, H. S., & Markus, H. R. (1999). Deviance or uniqueness, harmony or conformity? A cultural analysis. Journal of Personality and Social Psychology, 77, 785-800. https://doi.org/10.1037/0022-3514.77.4.785
- Krishna, A., Zhou, R., & Zhang, S. (2008). The effect of self-construal on spatial judgments. *Journal* of Consumer Research, 35(3), 337-348. https://doi.org/10.1086/588686
- Kwang, N. A. (2005). Creativity, learning goal and self-construal: A cross-cultural investigation. Korean Journal of Thinking and Problem Solving, 15(1), 65-80.

- Kumar, V., & Srivastava, R. (2020). New perspectives on business model innovations in emerging markets. Journal of the Academy of Marketing Science, 48, (5), 815-825. https://doi.org/10.1007/s11747-019-00713-2
- Malik, A., Merunka, D., Akram, M. S., Barnes, B. R., & Chen, A. (2020). Self-concept, individual characteristics, and counterfeit consumption: Evidence from an emerging market. *Psychology* & Marketing, 37(10), 1378-1395. https://doi.org/10.1002/mar.21386
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. Psychological Review, 98, 224-253. https://doi.org/10.1037/0033-295X.98.2.224
- Martindale, A. K. (2017). Women's motivations to sew clothing for themselves [Doctoral dissertation, lowa State University]. ProQuest Dissertations Publishing.
- McKinsey & Company (2021). McKinsey Global Surveys, 2021: A year in review. https://www.mckinsey.com/~/media/mckinsey /featured%20insights/mckinsey%20global%20sur veys/mckinsey-global-surveys-2021-a-year-inreview.pdf
- Mkhize, N., Ellis, D., Mkhize, M. N., & Ellis, P. D. (2020). How ecologically conscious are South African consumers? https://www.researchgate.net/publication/342 819941
- Office for National Statistics (2021). Data on public attitudes to the environment and the impact of climate change, Great Britain. https://www.ons.gov.uk/peoplepopulationandc ommunity/wellbeing/datasets/dataonpublicatti tudestotheenvironmentandtheimpactofclimatec hangegreatbritain
- Park, H. S., & Ahn, J. Y. (2008). Cultural differences in estimation of other people's self-construals: Comparison of Korea and US.A. Asian Journal of Social Psychology, 11(3), 208-213. https://doi.org/10.1111/j.1467-839X.2008.00255.x
- Park, H.J., & Lin, L.M. (2020). Exploring attitudebehavior gap in sustainable consumption: Comparison of recycled and upcycled fashion products. *Journal of Business Research*, 117, 623-628.
 - https://doi.org/10.1016/j.jbusres.2018.08.025
- Petrosyan, A. (2024, January). Number of internet and social media users worldwide as of January 2024. https://www.statista.com/statistics/617136/di
 - gital-population-worldwide/

- Sanders, E. B. N. (2006). Scaffolds for building everyday creativity. In J. Frascara (Ed.), *Design* for effective communications: Creating Contexts for Clarity and Meaning, (pp. 65-77). Allworth Press.
- Schofield-Tomschin, S., & Littrell, M. A. (2001). Textile handcraft guild participation: A conduit to successful aging. *Clothing and Textiles Research Journal*, 19, 41-51. https://doi.org/10.1177/0887302X0101900
- Schroeder, P., & Ananatharaman, M. (2017). "Lifestyle leapfrogging" in emerging economies: Enabling systemic shifts to sustainable consumption. *Journal of Consumer Policy*, 40(1), 3-23. https://doi.org/10.1007/s10603-016-9339-3
- Singelis, T. M. (1994). The measurement of independent and interdependent self construals. *Personality and Social Psychology Bulletin*, 20(5), 580-591. https://doi.org/10.1177/0146167294205014
- The World Bank Group. (2022, October). South Africa: Country climate and development report. https://openknowledge.worldbank.org/server/ api/core/bitstreams/52409ffd-96f7-58d4-be7fc8114abbd4c5/content
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*, 506-520. https://doi.org/10.1037/0033-295X.96.3.506
- United Nations. (2022). The-sustainabledevelopment-goals-report-2022. https://unstats.un.org/sdgs/report/2022/
- van den Bergh, J. (2022, March). 8 out of 10 South African consumers want brands to drive change for sustainability. https://www.insitesconsulting.com/blog/sustainability-in-southafrica/
- Wang, Q., & Ross, M. (2005). What we remember and what we tell: The effects of culture and selfpriming on memory representations and narratives. *Memory*, 13, 594-606. https://doi.org/10.180/09658210444000223
- Winkler, H., Altieri, K., & Keen, S. (2017, March). Health costs of energy related air pollution in South Africa. https://www.theigc.org/collections/healthcosts-energy-related-air-pollution-south-africa
- Wang, C., Ghadimi, P., Lim, M. K., & Tseng, M. L. (2019). A literature review of sustainable consumption and production: A comparative analysis in developed and developing economies. *Journal of cleaner production*, 206, 741-754. https://doi.org/10.1016/j.jclepro.2018.09.172