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Consumer Perceptions Related to Clothing Repair and Community Mending Events: A Circular Economy Perspective

Sonali Diddi * and Ruoh-Nan Yan

Department of Design and Merchandising, College of Health and Human Sciences, Colorado State University, Fort Collins, CO 80523, USA; Ruoh-Nan.Yan@colostate.edu

*   Correspondence: sonali.diddi@colostate.edu

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Abstract: While research focusing on clothing repair and community mending events as part of sustainable clothing consumption practices has been conducted in some developed European countries (e.g., the U.K. and the Netherlands), little research has examined consumer clothes mending/repairing behavior in a U.S. context. The purpose of this study was to explore U.S. consumers' specific barriers and motivations to engage in clothing repair and their likelihood to participate in clothes mending and community mending events. An intercept survey approach was used to administer a questionnaire to participants who were attendees at three different events in a mid-sized city in Colorado, U.S. across a two-week time span. Data were collected from 254 participants. Path analysis was conducted to test four sets of hypotheses. The results suggested that consumers' perceived barriers negatively influenced their mending frequency. Consumer's perceived motivations positively influenced their attitudes toward mending, their mending frequency, and sustainable post-consumption clothing behaviors (SPCBs). Furthermore, participants' attitudes toward mending, mending frequency, and their SPCBs positively influenced their intentions to mend clothes and to participate in community mending events. The current study advances the understanding of US consumers' clothes mending behaviors and provides critical implications for local governments and education systems.

Keywords: attitudes; barriers; clothes mending; community; circular economy; fast fashion; motivations; repair; sustainability

1. Introduction

The U.S. Environmental Protection Agency (USEPA) [1] estimates that post-consumer textile waste (PCTW) constitutes to almost 6% of the municipal solid waste in the U.S. landfills every year. PCTW has increased by almost 50% in the last 25 years, with 11.1 million tons (85%) of clothing ending up in the U.S. landfills in 2015 alone. Contrary to the belief that all donated clothes are resold/reused in the U.S., only about one-fifth of the clothing donated to charities is directly used or sold in thrift shops or exported to developing countries in Africa. A majority, however, ends up in landfills. Previous research [2] has attributed fast fashion consumption as one of the primary reasons for the increase in clothing disposal. The past two decades have seen a steep rise in fast fashion overconsumption, where consumers do not attach any emotions or value to a fashion item and treat it as disposable [3]. The overconsumption of fast fashion has had adverse effects on the earth's natural resources, including its capacity to absorb greenhouse gas emissions, hazardous chemicals, the increased use of water, and the billions of tons of fashion disposal waste entering into landfills every year. At the current rate of fashion consumption, we will see about a 60% increase, amounting to approximately 148 million tons of fashion waste from now until 2030—almost 33 pounds per person on Earth [4]. The majority of

the world's fashion waste ends up in a landfill or is burnt, with only about 20% of fashion clothing reused or recycled [5]. The global average of consumption for clothes is 11 lbs per person. However, the average North American consumer bought 35 lbs of new clothes in 2014—equivalent to 64 t-shirts or 16 pairs of jeans [4].

Recognizing the global fashion industry's impact on climate change, the United Nations Framework Convention on Climate Change (UNFCCC), in collaboration with different sectors and members across the global fashion supply chain, formed the Fashion Industry Charter on Climate Change (FICCC) in September 2018. This charter recognizes that the current patterns of production and consumption in the fashion industry are not sufficient to deliver on the current climate agenda, and a concerted effort by stakeholders, such as those in industry, policymakers, consumers, and governments, is needed to meet the goals of the Paris Agreement [6]. The FICCC, in their September 2018 working meeting, envisioned achieving climate neutrality by 2050, with major brands committing to a 30% reduction in greenhouse gas (GHG) emissions using science-based targets and circular economy (CE) principles. A circular economy is "an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and business models" [7] (p. 7). The CE business model includes concepts such as systems-thinking, cradle-to-cradle, product life cycle analysis, resource efficiency, and performance economy. Furthermore, CE contributes immensely to local job creation and reducing the carbon footprint [8]. Research conducted in the U.K. showed that reuse, repair, and recycling have created 1.2 million jobs in Europe, with over 200,000 jobs in the U.K. alone [9]. However, at present, numerous product categories are not built to extend product use by reuse or repair techniques. Previous research has shown that extending the useful life of products can reduce environmental impact in all stages of the supply chain (e.g., raw material production, manufacturing, distribution, and end-of-life) [10].

With the fashion industry moving from a traditional linear economy—the "take–make–use–dispose" model of production and consumption—to a CE model, it is imperative that consumers are empowered as they transition to sustainable lifestyles. While different stakeholders in the textiles and clothing industries have committed to reducing environmental impact and designing clothes that have longer lifecycles, ways to engage consumers to contribute towards fashion circularity are in their nascent stages. Textile and apparel companies are incorporating CE principles by reusing post-consumer textile waste to make new products. These companies focus on designing clothes with a longer usable life and developing a transparent supply chain [11]. Numerous apparel brands (e.g., Patagonia, Eileen Fisher, Filson, REI, and Fjällräven) are promoting sustainable consumption by offering clothes that last longer and encouraging consumers to invest in high quality clothes that can be repaired rather than replaced. To foster a circular economy and promote the repair–reuse mindset among consumers, apparel brands are offering repair services in store and are also making mail-order repair kits (e.g., Nudie Jeans) available to consumers. To address circularity in the textiles and apparel industries, new alternative business models that provide services (e.g., repair, resell, rent) encourage sustainable clothing consumption behaviors. One such example is The Renewal Workshop, where the company works with brands like prAna to handle their unsold, damaged inventory, or customer returns that need repair. The Renewal Workshop repairs apparel received from brands and resells on their platform. By providing a second life for clothing through repair, the company diverted 20,000 pounds of clothing from U.S. landfills, saved 15,000 gallons of gasoline, conserved 100,000,000 gallons of water, and saved 60,000 pounds of chemicals in 2016 alone [12].

Fletcher [13] asserts that consumers also play a vital role in extending the product lifecycle of clothes through maintenance and use. The framework developed by the Nordic Fashion Association [14] and the Ellen McArthur Foundation's recent report [7] on the circular economy in the textiles and clothing industry identified clothing repair and mending as an important element to extend the product lifecycle of clothes. Research has shown that there is a 20–30% annual reduction in the carbon, water, and waste

footprints of clothing just by extending the average life of clothing by nine months, thereby contributing to resource efficiency during consumer use [15]. While many developed European countries (e.g., the U.K., Denmark, the Netherlands, and Sweden) recognize the need for baseline data on sustainable clothing consumption practices, which includes laundry and clothing repair activities, this type of research is still in its nascent stages in the U.S. [16,17]. With home economics education vanishing from U.S. universities, clothes mending and sewing skills have been on the decline in the U.S. It is estimated that U.S. consumers spend less than 2% of what they spend on clothing towards their repair and cleaning [17].

Previous qualitative studies [18–20] undertaken in countries such as the U.K., Norway, Scotland, and other Nordic countries identified that lack of time and repair skills and the high costs associated with clothing repair discourage consumers from engaging in clothes mending practices. However, there has been very minimal research conducted to understand U.S. consumers' motivations and barriers to engage in clothes repair. Furthermore, recent years have witnessed the emergence of repair cafés: "communal repair/mending workshops that seek to provide an alternative to the make-take-waste paradigm dominating the fast fashion industry in most Western countries" [21] (p. 1). Repair cafes are fairly new in the U.S. context and are concentrated in big urban cities like New York and San Francisco. However, with the climate action goals of numerous U.S. cities, there has been a renewed interest towards textile reuse, repair, and recycle initiatives [22]. Community repair events not only decrease the material waste ending up in landfills but also provide social exchange opportunities to gain new knowledge and skills to repair products, thereby contributing to societal well-being [21].

With the increase in U.S. consumers' awareness of the environmental and social impacts of clothing consumption and interest in clothes mending gaining momentum with the emergence of repair cafes, it is imperative to understand the motivations for and barriers to engaging in clothing repair. Thus, the purpose of this study was to explore community-based approaches to engage in clothing repair activities. Specifically, this study aimed to understand (a) consumers' perceptions (barriers and motivations) related to clothes mending and (b) the frequency of their clothes mending behaviors. This study also examined relationships among consumers' perceptions, attitudes, and behavioral intentions related to clothes mending and participation in local repair events. This study uses clothing "repair" and "mend" interchangeably and broadly defines clothing repair/mending as tasks undertaken to extend the use period of clothing that is damaged and/or does not fit (e.g., fix rips, sew buttons, altering the fit of the garment). This definition closely follows previous studies undertaken in the clothing context [19,23,24]. This is one of the first studies examining clothes mending in a U.S. context. Knowledge of consumers' clothes mending skills and their interest in participating in repair events has implications for policy development at the local, regional, and national level. Findings from this study can be beneficial for university educators to facilitate curriculum modifications and community outreach activities.

2. Conceptual Framework and Hypotheses Development

Fletcher [25] indicates that consumers can play an important role in reducing the rate of clothing disposal by engaging in product lifecycle extension practices, such as mending or repairing clothes. The Worldwide Responsible Accredited Production's (WRAP) 2017 consumer clothing survey findings indicate that almost 30% of U.K. consumers surveyed (n = 2038) had garments that they had not worn because they needed some kind of repair (e.g., broken zip, lost button, elastic replacement, or some other repair). Nearly one-third reported that they were more likely to repair clothes if they had the necessary skills and around 20% of participants indicated that they could have used half of their unworn clothes if they were repaired. This equates to 166 million clothing items in the U.K. alone [26].

Fast fashion has had a disabling effect, as consumers perceive that they no longer need the skills that will help them repair their clothes [18,27]. The increased availability of cheap and low-quality clothes has discouraged consumers from engaging in clothing repairs [13,20,28]. Previous research examining U.K. and Scandinavian consumers' barriers to mending their clothes has identified practical,

social, socioeconomic, systemic, and psychological reasons that hinder a consumer's likelihood to engage in even the most basic clothing repairs. This has resulted in huge amounts of slightly damaged clothes also ending up landfills (see, for example, [28–33]). Among the most commonly cited reasons for not repairing clothes in qualitative studies, consumers have reported the high costs associated with repair, which is a time-consuming activity requiring a high level of skill [18,19,29]. Repaired clothes also have negative connotations, considering clothing repair as "women's work", a domestic and unnecessary chore, and a sign of poverty. This is evident in Fisher et al.'s [34] (p. 31) study, where participants shared that they "avoid clothes with visible repairs in order to protect themselves and their families from stigma". Interestingly, McLaren and McLauchan [20] explored a series of facilitated public engagement events in 2014 across Scotland to explore practice-based approaches that engage the public and encourage community participation in clothing repair. They found that extremely skilled quilters and embroiders in craft groups did not perceive that they could use these skills to repair clothes. While these quilters and embroiders engaged in a variety of pro-environmental activities (e.g., composting and ride sharing), they did not associate clothes mending with environmental benefits [20,21,28]. Furthermore, participants in McLaren and McLauchan's [20] study associated clothes mending and repair with poverty.

The contemporary consumer culture defined by fast fashion consumption has added to the problem, as consumers no longer feel emotionally attached to their clothes and hence have no incentive to repair and extend their useful life. Such loss of connection has had a profound impact on the consumer psychology related to repair. As Fletcher [35] suggests, "the products themselves are presented to us as complete or 'closed', with an almost untouchable or sacrosanct status. This dissuades us from personalizing them in order to make them our own" (p. 187). Very minimal research has examined the specific barriers to mending/repairing clothes in a U.S. context. Norum's [17] study examined U.S. consumers' (baby boomer, generation X, and generation Y) levels of apparel maintenance skills (e.g., button sewing, repair skills, and hemming). The study's findings indicate that repair skills were significantly influenced by hand sewing skills, especially among the baby boomer generation (55–75 years old). Mean scores related to sewing and repair were the lowest among generation Y consumers. McGrath [36], in his study, found that U.S. millennials have significantly lower sewing skills than older generations. The current study is unique in its contributions as it examines specific barriers to clothes mending among U.S. consumers and their influence on attitudes towards mending, frequency of mending, and sustainable post-consumption clothing behaviors (SPCB). Refer to the conceptual framework (Figure 1) showing these hypothesized relationships. Based on the research cited above, the following hypotheses were formed:

Hypothesis 1 (H1a). *Consumers' perceived barriers toward clothes mending will negatively affect their attitudes towards mending;*

Hypothesis 1 (H1b). *Consumers' perceived barriers toward clothes mending will negatively affect their mending frequency;*

Hypothesis 1 (H1c). *Consumers' perceived barriers toward clothes mending will negatively affect their sustainable post-consumption clothing behaviors.*

Design practitioners and academic researchers have explored numerous ways to overcome barriers related to clothes mending. Notable among these are visible mending programs and community repair events. While small in scale, these grassroots initiatives are facilitating community dialog on the importance of repair and the perceptions related to it. Visible mending is a strategy proposed by design theorist Jonathan Chapman [37]. Visible mending promotes building a user's emotional connection with their clothes by repairing clothing in such a way that the repairs are no longer hidden and are visible to make a personal statement. This, according to Chapman, "reinforces the relationship between wearer and garment ... and hopefully persuade[s] them that shop-bought clothes deserve

care and attention too" [38]. Middleton's [39] "2010 Sock Exchange" darning event and Otto von Busch's [40] "Community Repair Project" are other examples of establishing rich social experiences that not only promote product longevity but also contribute to societal well-being and happiness.
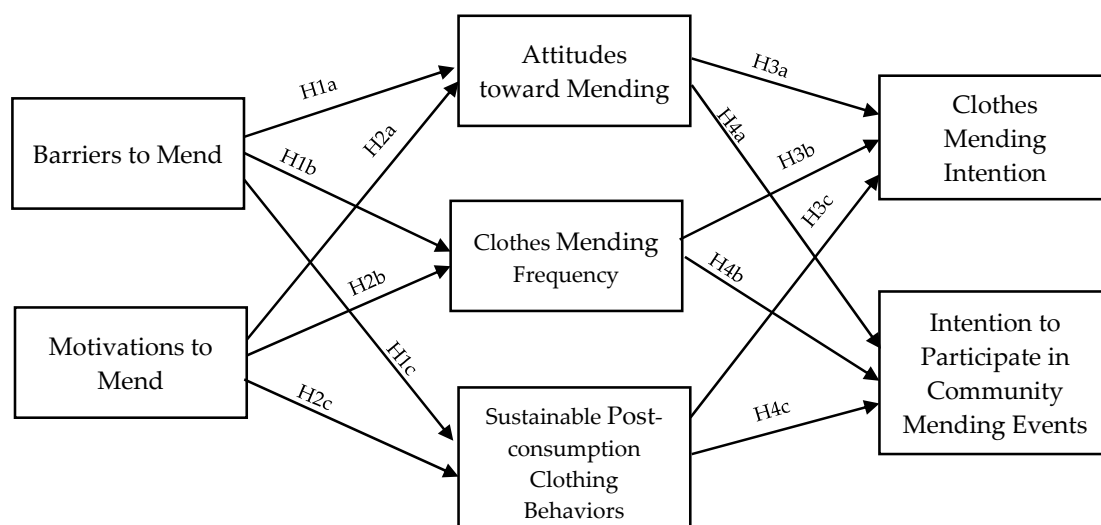

Figure 1. Conceptual framework showing the hypothesized relationships.

Chapman [41] notes that consumers increasingly do not associate with repairing clothes, as they are socially conditioned out of the making process. However, community repair events provide venues for a "collaborative form of fixing [that] encourages the replacement of shopping (as a stimulus seeking activity), with more creative and social experiences, centered on the shared act of making and mending". McLaren and McLauchan's [20] and Laitala and Bok's [31] studies also indicate that consumers are more likely to repair clothes if they have a personal connection to them or if they deem the clothing items as favorites. Furthermore, numerous qualitative studies have shown that consumers' social and experiential relationships with a piece of clothing during its use phase determine the level of care, maintenance, and repair it receives. Attachment to one's clothing and having repair and sewing skills have also been shown to positively influence consumers' sustainable clothing disposal decisions [31,32,42]. Durrani's [21] study explored consumers' learning processes and the outcomes related to clothes mending in communal settings. The findings of Durrani's [21] qualitative study undertaken in New Zealand show that engaging in clothing repair helped participants extend the useful life of their garments, minimize the number of clothes that end up in landfills, reuse clothes by redesigning them through repair, and decrease the frequency with which they buy new clothes. The current study identified different motivations to repair clothes from previous qualitative studies [18,20] to examine its influence on U.S. consumers' attitudes towards mending, frequency of mending, and sustainable post-consumption clothing behaviors. Thus, the following hypotheses are proposed:

Hypothesis 2 (H2a). *Consumers' perceived motivations toward clothes mending will positively influence their attitudes towards mending;*

Hypothesis 2 (H2b). *Consumers' perceived motivations toward clothes mending will positively influence their mending frequency;*

Hypothesis 2 (H2c). *Consumers' perceived motivations toward clothes mending will positively influence their sustainable post-consumption clothing behaviors.*

In line with the Paris Climate agreement and United Nations Sustainable Development Goal 12 (Ensure Sustainable Consumption and Production (SCP) Patterns), sustainable clothing consumption behaviors (SCCBs) can be defined as a "variety of behaviors that consumers engage in to minimize their environmental and social impacts in relation to their clothing consumption decisions" [43] (p. 200). Numerous studies have examined different types of SCCBs to understand consumers' motivations and barriers (see review in [43]). However, much less attention has been given to how consumers can actively engage in SCCBs related to extending a product's lifecycle at a community level. This is in line with FICCC's [6] call for more holistic and systemic changes, which include a closer dialogue with consumers, to increase awareness of their clothing consumption decisions both during use and during the end-of-life phases, to facilitate extending a product's life cycle while reducing environmental impacts. Research has shown that individuals are more likely to engage in repairing clothes if they have positive attitudes towards mending and the skills associated with mending [21]. Minimal research has investigated U.S. consumers' intentions to mend or get their clothes mended. Of the quantitative studies undertaken in the U.S., Norum [17] found that clothes mending skills directly influenced consumers' abilities to engage in sustainable maintenance practices (like laundering). Further, McGrath's [36] study of U.S. millennials indicated that they were more likely to use clothes longer and buy less if they were better at repairing or making clothes. This study addresses the call for further investigations by Laitala and Klepp [19], as it relates to the knowledge, attitudes, and behaviors related to clothing repair in the U.S. context. The following relationships are hypothesized:

Hypothesis 3 (H3a). *Consumers' attitudes toward mending will positively influence their intentions to mend their clothing;*

Hypothesis 3 (H3b). *Consumers' frequency of clothes mending will positively influence their intentions to mend their clothing;*

Hypothesis 3 (H3c). *Consumers' sustainable post-consumption clothing behaviors will positively influence their intentions to mend their clothing.*

There is an increasing interest in alternative models of consumption and production to address the overconsumption epidemic [44]. Communities are playing a vital role in addressing the different facets related to responsible and sustainable consumption. Sharing, renting, and swapping are becoming popular ways to address sustainability at community levels. Such alternative economies confer community benefits not only to reduce the environmental footprint but also to provide consumers with an enhanced sense of belonging and psychological well-being [44]. Sharing time, skills, and experience (such as in the case of communal mending events) promotes collaborative consumption, which helps one to reuse materials goods (like clothes), extend a product's life, and build social connections [21,45,46]. Other research has shown that engaging in clothes mending in a social setting also helps users attain a sense of achievement and promotes mindful consumption [47,48]. With numerous community repair events/cafes organized across the globe, it is imperative to understand the factors that will influence U.S. consumers to participate in such community events. Schor [49] asserts that environmental crisis has a profound impact on people's value systems, their relationship to their material belongings, and their ways of living. Social innovations like community workshops related to repair and sharing provide intergenerational learning opportunities [21] and rebuild social ties that have been lost due to consumerist culture. Durrani's [21] interviews with 35 participants across six repair workshops in New Zealand indicated that participants learned new skills related to clothes mending, helping them to extend the use of existing clothes, engage in sustainable clothing disposal behaviors, and (most importantly) develop feelings of care, reliance, and empowerment in communities. The study concluded that such community repair workshops provide "sustainable local solutions to global ecological problems and create diversified learning around the sociomaterial and ecological aspects of garments and their care" [21] (p. 1). Very little research has focused on

clothing repair in a U.S. context, especially in communal settings. Hence, the following relationships are hypothesized:

Hypothesis 4 (H4a). *Consumers' attitudes towards clothes mending will positively influence their intentions to participate in community mending events;*

Hypothesis 4 (H4b). *Consumers' frequency of clothes mending will positively influence their intentions to participate in community mending events;*

Hypothesis 4 (H4c). *Consumers' sustainable post-consumption clothing behaviors will positively influence their intentions to participate in community mending events.*

3. Materials and Methods

3.1. Participants and Setting

An intercept survey approach was used to administer the questionnaire to participants who were attendees at three different events in a mid-sized city in Colorado, USA across a two-week time span. Data and demographics of the respondents were collected on site during each of the events. The first event was hosted by the city and featured sustainability on different levels, including energy consumption, clothes mending, and waste management. The second event was a private, free public event featuring a clothing swap where attendees could bring gently used clothes for exchange. The third event hosted by the researchers featured a screening of the documentary film, RiverBlue, which portrayed the environmental impact of the fashion industry, specifically on water streams.

Data were collected by the researchers, as well as graduate and undergraduate assistants, from a large western university in the United States. The sample included 254 city residents, ranging in age from 18 to 73 years (M = 33.43 years). The gender (27% male and 73% female) and ethnic mix of the sample mirrored the city population from which it was drawn (United States Census Bureau, 2018), with the majority (81%) reporting Caucasian ethnicity. Approximately 78% of the participants reported annual household incomes below $75,000. Participants' monthly expenditures for clothing for themselves ranged from $0–200, with an average monthly expenditure of $36.35.

3.2. Instrumentation

The questionnaire included socio-demographic items—age, gender, occupation, ethnicity, and household incomes—and the following quantitative measures. Principle component analysis with Varimax rotation was used as the data reduction method for the selected multi-item scales (as described below). A minimum eigenvalue of 1.0 determined the number of factors extracted. Item loading equal to or greater than 0.60 for a given factor and less than 0.30 for other factors were retained to ensure unidimensionality [50].

Items to measure barriers related to clothes mending (BARR) were developed based on qualitative studies [18,21,28]. This construct was measured using seven statements on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Factor analysis results revealed one factor. Example items included "I don't have the skills" and "it's inconvenient and not worth the effort." Cronbach's alpha for the seven-item scale was 0.84.

Items related to motivations for clothes mending (MOT) were developed from previous studies [18,20,43,51]. Participants' motivations for having their clothes mended were assessed using five statements measured on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Based upon the factor analysis, all of the five items were retained: (a) "I paid high prices for them", (b) "I have a personal attachment to them", (c) "they fit me really well", (d) "they continue to last longer", and (e) "I try to reduce my environmental footprint". Cronbach's alpha was 0.83.

Following previous studies [43,51], items were adapted to measure the attitude toward clothes mending (ATTMEND) with four items on a seven-point semantic scale. Based upon the factor analysis,

three items were retained: (a) Unimportant–Important, (b) Bad–Good, and (c) Worthless–Valuable. Cronbach's alpha for the three-item scale was 0.84.

Modified from the previous literature [43,48], the frequency of mending-related behaviors (MENDFREQ) was assessed using four statements measured on a seven-point Likert scale (1 = never; 7 = always). Based on the factor analysis, all four items were retained: (a) "I mend my own clothes", (b) "I help mend clothes for my family and/or friends", (c) "I feel confident in my mending skills", and (d) "I ask my family and/friends to help mend my clothes". Cronbach's alpha for the four-item scale was 0.72.

Considering the different types of behaviors in the post-consumption phase, sustainable post-consumption clothing behaviors (SPCB) was assessed with five items on a seven-point Likert scale (1 = Never 7 = Always) borrowed from Diddi et al. [43]. Example items included "donate to second hand or thrift stores", "exchange/swap with friends", and "reuse for other purposes (e.g., cleaning rags)". All of the items emerged into one factor, with Cronbach's alpha as 0.67.

Participants' intentions to have their clothes mended (MENDINTD) were assessed using three statements on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Items were developed based on qualitative studies [18,20,52]. Factor analysis results showed that one factor emerged from all three items: (a) "I intend to mend my clothes in the next year", (b) "I intend to get my clothes mended in the next year", and (c) "I intend to learn more about basic clothes mending in the next year". Cronbach's alpha for the three-item scale was 0.66.

Intention to participate in community mending events (EVENTINTD) was measured with four statements on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Items were developed based on qualitative studies [18,20,52]. Factor analysis results revealed one factor for all four items: (a) "we should have repair or mending events in the community", (b) "I will volunteer my skills for the community repair/mending event", (c) "I will volunteer my time for the community repair/mending event", and (d) "I will bring items (e.g., bikes, clothes) to a community repair/mending event". Cronbach's alpha for the four-item scale was 0.78.

4. Results

4.1. Data Analysis and Preliminary Findings

Data analysis was conducted in two phases: preliminary analysis and hypothesis testing. Preliminary analyses consisted of descriptive statistics (mean and standard deviation), frequencies, (see Table 1), and Pearson correlation and reliability (see Table 2). The results of the diagnostic analyses indicate no multicollinearity among the various constructs examined in this study. The variance inflation factor (VIF) for the relevant regression models ranged from 1.09 to 1.22, and the tolerance values ranged from 0.84 to 0.92, and, thus, fell within the acceptable ranges identified by Hair et al. [53] Hypothesis testing was conducted using path analysis. SPSS AMOS (version 26.0) was used for path analysis. According to Kline [54], an adequate sample size should be ten times the number of parameters in path analysis. Thus, our sample size of 254 for the path analysis met the requirement. Path analysis, an extension of multiple regression, was conducted to test the hypotheses in the proposed conceptual framework. Perceived barriers and motivations were entered as the first set of exogenous variables, and attitude toward mending, clothes mending frequency, and sustainable post-consumption clothing behaviors were entered as the second set of exogenous variables, and clothes mending intention and intention to participate in community mending events as the endogenous variables. Path analysis makes it possible to evaluate the strength and significance of the hypothesized connections between sets of variables simultaneously, including indirect or mediating relationships [55,56]. Furthermore, to ensure the robustness of the hypothesized relationships, additional Bayesian analyses were conducted to calculate Bayes factors (BFs) using JASP 10.2. Bayesian factors provide support related to the strength of the evidence in favor of null hypothesis over the alternate hypothesis [57], which traditional

p-values do not [58]. Bayes factors helped confirm findings related to the hypothesized relationships and are available in the Supplementary Materials.

Table 1. Descriptive statistics of the constructs used for data analysis.

Construct	Items	Mean	S.D.	Frequency (1–7 Likert Scale)		
				1–3	4	5–7
Barriers to Clothes Mending (1 = Strongly disagree; 4 = Neither disagree nor agree; 7 = Strongly agree)	**I do not mend or have my clothes mended because:**					
	I don't have the skills	4.49	2.25	31.5%	12.2%	56.4%
	It's too time consuming	4.01	1.98	37.4%	17.3%	45.3%
	It's inconvenient and not worth the effort	3.05	1.77	66.1%	15.4%	23.6%
	I worry they would not look the same after mending	3.12	2.05	62.6%	10.6%	26.8%
	I worry they would not fit the same after mending	2.93	1.86	66.9%	13.4%	19.7%
	Alteration services are expensive	4.69	2.02	24%	13.8%	62.2%
	Alteration services are hard to find in my community	3.63	1.98	47.6%	20.5%	31.9%
Motivations for Clothes Mending (1 = Strongly Disagree; 4 = Neither disagree nor agree; 7 = Strongly agree)	**I would consider having my clothes mended if:**					
	. . . I paid high prices for them	5.43	1.89	17.3%	5.5%	77.2%
	. . . I have a personal attachment to them	5.92	1.58	10.2%	5.1%	84.6%
	. . . they fit me really well	5.78	1.55	9.4%	9.1%	81.5%
	. . . they continue to last longer	5.99	1.46	7.1%	5.5%	87.4%
	. . . I try to reduce my environmental footprint	5.97	1.39	7.1%	5.5%	87.4%
Attitudes toward Clothes Mending (Semantic Differential)	**I feel repairing or mending clothing is:**					
	Unimportant–Important	5.81	1.40	5.1%	13%	81.9%
	Bad–Good	5.93	1.61	7.9%	7.9%	84.2%
	Worthless–Valuable	5.83	1.58	8.3%	8.7%	83%
Clothes Mending Frequency (1 = Never, 7 = Always)	I mend my own clothes	3.35	1.92	55.5%	13.4%	31.1%
	I help mend clothes for my family and/or friends	2.58	1.91	69.3%	9.1%	21.6%
	I feel confident in my mending skills	2.90	1.84	66.1%	13%	20.9%
	I ask my family and/or friends to help mend my clothes	3.42	2.06	55.5%	11%	33.5%
Sustainable Post-consumption Clothing Behaviors (1 = Never, 7 = Always)	**How often do you engage in each of the following?**					
	Donate to second-hand or thrift stores (e.g., Goodwill) or charity	6.26	1.22	5.1%	2.4%	92.50%
	Sell to consignment stores (e.g., Plato's Closet)	3.33	2.19	59.1%	6.7%	34.20%
	Hand them down to family/relatives	4.29	1.96	33.1%	14.6%	52.30%
	Exchange/swap with friends	3.95	2.12	45.7%	12.6%	41.70%
	Reuse for other purposes (e.g., as a cleaning rag)	4.45	1.89	31.1%	11.8%	57.10%
Clothes Mending Intention (1 = Strongly Disagree; 4 = Neither disagree nor agree; 7 = Strongly agree)	**I intend to:**					
	Mend my clothes in the next year	4.59	2.01	31.9%	13.8%	54.30%
	Get my clothes mended in the next year	3.97	1.87	46.9%	15.7%	37.40%
	Learn more about basic clothes mending in the next year	4.18	1.91	34.3%	14.2%	51.50%
Intention to Participate in Community Mending Events (1 = Strongly Disagree; 4 = Neither disagree nor agree; 7 = Strongly agree)	We should have repair or mending events in the community	6.08	1.28	5.5%	4.7%	89.80%
	I will volunteer my skills for a community repair/mending event	3.33	1.97	57.1%	16.1%	26.80%
	I will volunteer my time for a community repair/mending event	3.99	1.98	40.6%	20.1%	39.30%
	I will bring items (e.g., bikes, clothes, toasters, hair dryers) to a community repairing/mending event	5.34	1.68	13.4%	13.4%	73.20%

Table 2. Correlation matrix between all variables.

	BARR	MOT	ATTMEND	MENDFREQ	SPCB	MENDINTD	EVENTINTD
BARR	1						
MOT	−0.10	1					
ATTMEND	−0.14 **	0.31 ***	1				
MENDFREQ	−0.37 ***	0.19 ***	0.16 ***	1			
SPCB	−0.04	0.22 ***	0.13 ***	0.26 ***	1		
MENDINTD	−0.26 ***	0.35 ***	0.36 ***	0.42 ***	0.27 ***	1	
EVENTINTD	−0.14 **	0.30 ***	0.31 ***	0.31 ***	0.25 ***	0.41 ***	1
Cronbach's α	**0.84**	**0.83**	**0.84**	**0.72**	**0.67**	**0.66**	**0.78**

BARR: barriers to clothes mending; MOT: motivations for clothes mending; ATTMEND: attitudes toward clothes mending; MENDFREQ: clothes mending frequency; SPCB: sustainable post-consumption clothing behaviors; MENDINTD: clothes mending intention; EVENTINTD: intention to participate in community mending events; *** $p \leq 0.001$, ** $p \leq 0.05$.

Descriptive statistics (see Table 1) on single items measuring barriers, motivation, and frequency related to clothes mending revealed that the top three barriers to engaging in clothing repair among participants in this study included "alteration services are expensive" ($M = 4.69$, $SD = 2.02$); "I don't have the skills" ($M = 4.49$, $SD = 2.25$); and "it's too time consuming" ($M = 4.01$, $SD = 1.98$). The top three motivation items included "they continue to last longer" ($M = 5.99$, $SD = 1.46$); "I try to reduce my environmental footprint" ($M = 5.97$, $SD = 1.39$); and "I have a personal attachment to them" ($M = 5.92$, $SD = 1.58$). The most prevalent clothes mending behavior was "I ask my family and/or friends to help mend my clothes" ($M = 3.42$, $SD = 2.06$), followed by "I mend my own clothes" ($M = 3.35$, $SD = 1.92$). Approximately 55% of the participants reported in the survey that they never or hardly mended their own clothes. Furthermore, even though over 30% of the participants reported that they mended their own clothes on a regular basis, only 20% of the participants felt confident in their mending skills. The top three sustainable post-consumption clothing behaviors that participants in this study engaged in were: donate to second-hand or thrift stores (e.g., Goodwill) or charity ($M = 6.26$, $SD = 1.22$); reuse for other purposes (e.g., as a cleaning rag) ($M = 4.45$, $SD = 1.89$); and hand them down to family/relatives ($M = 4.29$, $SD = 1.96$). A correlation matrix among variables is provided in Table 2.

4.2. Hypothesis Testing

Path analysis revealed that the proposed model had an acceptable model fit ($\chi^2 = 47.966$, $p > 0.001$, the goodness of fit index [GFI] = 0.95, the comparative fit index [CFI] = 0.85, the root mean square error of approximation [RMSEA] = 0.14). The hypothesized relationships were significant in the expected directions, except for the relationships between barriers and attitudes toward clothes mending and sustainable post-consumption clothing behaviors. The results of the path analysis are displayed in Table 3.

Table 3. Path analysis results (N = 254).

Independent Variables	Dependent Variables				
	ATTMEND	MENDFREQ	SPCB	MENDINTD	EVENTINTD
BARR	−0.10 (−1.8)	−0.36 *** (−6.17)	−0.05 (−0.75)		
MOT	0.33 *** (5.05)	0.18 ** (2.57)	0.28 *** (3.86)		
ATTMEND				0.32 *** (5.39)	0.25 *** (4.40)
MENDFREQ				0.34 *** (6.08)	0.20 *** (3.77)
SPCB				0.20 *** (3.64)	0.19 *** (3.56)
R^2	11%	16%	6%	18%	27%

BARR: barriers to clothes mending; MOT: motivations for clothes mending; ATTMEND: attitudes toward clothes mending; MENDFREQ: clothes mending frequency; SPCB: sustainable post-consumption clothing behaviors; MENDINTD: clothes mending intention; EVENTINTD: intention to participate in community mending events; *** $p \leq 0.001$, ** $p \leq 0.01$.

Hypotheses 1a, 1b, and 1c stated that consumers' perceived barriers to clothes mending would negatively influence their (a) attitudes toward clothes mending, (b) clothes mending frequency, and

(c) sustainable post-consumption clothing behaviors. Path analysis revealed that the relationship between (a) perceived barriers and attitude toward mending was not significant ($\beta = -0.10$, $p > 0.05$); (b) perceived barriers negatively predicted clothes mending frequency ($\beta = -0.36$, $p \leq 0.001$), providing support for hypothesis H1b; and (c) perceived barriers toward mending and sustainable post-consumption clothing behaviors was also not significant ($\beta = -0.05$, $p > 0.05$). H1a and H1c were not supported.

Hypotheses 2a, 2b, and 2c stated that consumers' motivations for clothes mending would positively influence their (a) attitudes toward clothes mending, (b) clothes mending frequency, and (c) sustainable post-consumption clothing behaviors. Path analysis indicated that hypothesized relationships between motivations toward clothes mending and (a) attitudes toward mending ($\beta = 0.33$, $p \leq 0.001$); (b) clothes mending frequency ($\beta = 0.18$, $p \leq 0.01$); and (c) sustainable post-consumption clothing behaviors ($\beta = 0.28$, $p \leq 0.001$) were significant. Thus, hypotheses H2a, H2b, and H2c were all supported.

Hypothesis 3 stated that (a) attitude toward clothes mending, (b) clothes mending frequency, and (c) sustainable post-consumption clothing behaviors would positively influence participants' intention to engage in clothes mending. Path analysis results showed that attitude toward clothes mending, current clothes mending frequency, and current sustainable post-consumption clothing behaviors positively influenced clothes mending intention ($\beta = 0.32$, $p \leq 0.001$; $\beta = 0.34$, $p \leq 0.001$; $\beta = 0.20$, $p \leq 0.05$, respectively). Thus, H3a, H3b, and H3c were supported.

Hypothesis 4 stated that (a) attitude toward clothes mending, (b) clothes mending frequency, and (c) sustainable post-consumption clothing behaviors would positively influence participants' intention to participate in community mending events. Path analysis results revealed that attitude toward clothes mending, current clothes mending frequency, and current sustainable post-consumption clothing behaviors positively influenced mending café participation intention ($\beta = 0.25$, $p \leq 0.001$; $\beta = 0.20$, $p \leq 0.001$; $\beta = 0.19$, $p \leq 0.001$, respectively). Thus, H4a, H4b, and H4c were supported.

5. Discussion and Conclusions

The present study is one of the first quantitative studies to provide exploratory findings related to clothes mending as a way to extend a product's lifespan and a consumer's willingness to engage in social learning through local community mending events. The findings of this study provide important insight into the motivations and barriers toward clothes mending in the U.S. context. Compared to the findings of other countries like Norway [19], where approximately two-thirds (65%) of consumers have undertaken at least one mending or making task in 2017, U.S. consumers' engagement in clothing repair is minimal (30%). In conjunction with other studies, the top barriers related to mending included the high costs associated with clothing repair, not having the necessary skills, and the idea that clothing repair is a time-consuming activity [20,32,59]. Barriers related to mending also discouraged consumers in this study from frequently undertaking clothing repair. Studies in other geographical areas [18–20] do not cite "not having mending skills" as a barrier, as this element is unique to the U.S. context. The hypothesized relationship between barriers to mending and sustainable post-consumption clothing behaviors was not significant. This could be because, in this study, barriers to mending were measured with a focus on skillsets related to mending, so statistically there was no relationship between the barriers toward clothes mending and sustainable post-consumption clothing behaviors. Furthermore, as evident in McLaren and McLauchan's [20] study, individuals who have skills related to quilting and embroidery may not necessarily associate those skills with repair and sustainability. Additionally, there was no significant relationship between barriers to mending and attitude toward mending. This could also be due to the measurement of the barriers construct. Research has suggested that "no motivation" was considered a common barrier in physical activities (see, e.g., [60]); however, the barriers constructed in this study focused more on barriers to behavioral changes, such as time, money, and knowledge and skills.

It is also important to note that although consumers' motivations and mending frequency were positively related, the strength of the relationship was not as strong as that of motivations and (a)

attitude toward mending and (b) sustainable post-consumption clothing behaviors. This may indicate that although consumers in this study expressed a motivation to mend, the strength of that motivation on mending frequency was not as high. There was also a positive relationship between motivation to mend and attitude towards mending, as well as sustainable post-consumption clothing behaviors. Sustainable post-consumption clothing behaviors that respondents in this study engaged in more frequently were personal (e.g., hand them down to family; reuse them for other purposes) in nature. This could explain the positive relationship between motivations toward mending and engagement in sustainable post-consumption clothing behaviors. As such, this result may indicate that participants were more likely to mend if they intended to reuse clothes or give them to family/friends.

One of the unique findings in this study is that participants in this study perceived that clothes mending helped them reduce their environmental footprint, which may indicate that there is an increased consumer awareness of the fashion industry's environmental impact. Laitlala and Klepp [19] also saw a significant positive relationship between Norwegian participants' concerns related to climate change and their frequency of mending. However, other studies conducted in the U.K. [18,20] found that participants in their studies, though engaged in pro-environmental practices (e.g., recycling, composting), did not relate mending to decreasing the environmental impact of clothing. Rather, they engaged in mending to save loved garments. Almost half of the participants in this study indicated that they were willing to learn basic clothes mending in the next year (see Table 1). Furthermore, attitudes towards mending, frequency of mending, and engagement in sustainable post-consumption clothing behaviors showed 27% variance in participants' intentions to mend. These findings suggest a positive outlook in the U.S. context, as they may indicate that consumers equipped with mending skills are taking into account clothing quality and lifespan in their consumption decisions. Dialog in the community related to clothing repair may also prompt conversations related to fast fashion and the planned obsolescence of other products [21].

One of the limitations of this study that needs to be noted is that the survey participants were attendees of events focused around sustainability. Future research should explore consumer perceptions of clothes mending at general community events (e.g., at food and music festivals) to provide further insights. The findings of this study are not generalizable, as data were collected only from one U.S. city located in a state that prides itself on its sustainability efforts. The items used to measure barriers and motivations toward clothes mending were developed based on qualitative studies. Future studies may refine the instrument by conducting confirmatory factor analysis for scale development purposes. Community events could host mending workshops and test changes in knowledge and perceptions related to mending. Additionally, experimental studies that include pre and post methods may add more validity to the present measurement instrument. This study did not include barriers that signified mending as a sign of economic hardship. Discussions related to mending in European countries are very advanced and have topics relating mending to poverty and ways to overcome barriers related to clothing repair by engaging in programs like visible mending programs and community repair events. Such topics are still in their nascent stages in the U.S. Future studies should, therefore, investigate consumers' experiences related to visible mending techniques and other motivations and barriers. Sustainable clothing consumption and production (SCCP) practices have not yet received attention in a U.S. context. Studies related to SCCP could investigate the barriers faced by clothing designers and product developers to design clothing for reparability. Furthermore, future studies to understand consumers' limitations and the factors influencing their ascription of responsibility to take care of clothing as prescribed on their labels may help the industry design clothes that last longer. It may also be interesting to conduct a systematic literature review to document the various industry initiatives to promote sustainable clothing consumption that contribute to CE principles.

5.1. Public Policy Implications

This study is the first to explore community clothes mending events as a way to increase the lifespan of clothing and also provide a platform that encourages social well-being in a U.S. context. Almost 90% of the participants in this study supported the notion of having free mending events in the community. This may indicate that communities are open to exploring different initiatives that will help them challenge the make–take–waste paradigm promoted by big brands. Community mending events have been shown to play an important role in providing inclusive spaces that promote social justice [18,21]. Clothes mending community events also foster intergenerational learning opportunities, further strengthening bonds across generations and feelings of social connectedness. As community repair events promote a repair mindset, local governments who extend support to such community events may find it easier to tackle problems related to municipal solid waste ending up in local landfills. Such grassroots initiatives may also help develop sustainable solutions, wherein citizens, local businesses, and municipalities can inform policy development to achieve regional climate action goals.

In a broader context, the findings of this study contribute to solutions related to reducing the clothing overconsumption fueled by fast fashion. Engaging in repair will help develop emotional attachment to clothes, thereby helping consumers extend their clothing's lifespan. Developing skills related to mending may also equip consumers with knowledge related to identifying good and bad quality clothing [21]. Mending as a process may also help individuals engage in other sustainable clothing consumption behaviors, such as buying clothes less often, buying fewer clothes, taking better care of clothing (e.g., laundering at cool temperatures), and investing in higher quality clothing [43]. With increasing technology proliferation in everyday life (e.g., the use of smart gadgets), community mending events may open possibilities for rich social experiences that will help develop deep connections with oneself, others, and the environment, as well as providing knowledge exchange opportunities.

5.2. Managerial Implications

Positive attitudes and intentions toward clothes mending have important implications for clothing brands. With CE principles in the strategic agendas of mainstream clothing brands, providing repair services may no longer be an option but a requirement as a part of a brand's extended product responsibility (EPR) [61]. Small- and medium-sized boutiques/designer houses can capitalize on consumers' interests related to clothes mending by incorporating lifetime repair services for their clothing items. This will be beneficial in retaining consumer loyalty and also increase sales by contributing to the local economy. An increased focus on mending may also provide an impetus for alternative business models that could focus on repairing and mending as a service. To be competitive in the current marketplace, especially as online sales are increasing, brick and mortar stores can create experiences like organizing in-store clothes mending events. Participation in such events and gaining unique experiences have been shown to increase consumer retention and attract younger generations [62,63].

By engaging in clothes mending, consumers may hold brands accountable for providing products that last longer. This, in turn, will require brands to provide higher quality clothes with access to repair. The findings of this study also contribute to positive aspects related to making and mending in an educational context. Home economics and consumer science programs may include reframing mending-related skills as a way to promote sustainable consumption [17]. Consumer education related to mending and extending product lifespans can be undertaken to build a repository of common clothing repair techniques available on a blog or website. Such resources may also be available in small segments over social media (e.g., via Instagram) to help promote reparability and facilitate conversations related to product obsolescence due to fast fashion consumption.

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