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## Influence of COVID-19 on changes in dressing behaviours of U.S. adults

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### Abstract

*The objective of this research was to assess the impact of the currently lived COVID-19 pandemic on dressing behaviours of a cross-section of the U.S. adult population. Participants (N = 844) completed a survey via Amazon Mechanical Turk which evaluated frequency of wearing of eight dressing categories—accessories, informal dress, formal dress, protective dress, hair practices, scent products, appearance enhancement, and make-up (females) prior to and during the pandemic. Physical, emotional and psychological self-care and demographics were also collected. Overall, during the pandemic participants engaged in less dressing behaviours, dressed informal clothing (e.g., jeans, t-shirts) and incorporated protective dress. These findings may support previous research that found consumers purchase of comforting products during times of stress. Further research could include conducting a comparative study where data can be collected including post-pandemic data and data from world-wide geographic regions.*

**KEYWORDS:** COVID-19 PANDEMIC, DRESSING BEHAVIOUR, FASHION THEORY

### Introduction

Dress is an important part of daily life and it is greatly impacted by societal events, such as war, natural disasters, and economic depression (e.g., Kim et al., 2011). The COVID-19 pandemic not only has broader impacts on society, but it has had significant effects on daily routines, income losses, socialising, and attention to cleanliness. All of these changes impact dressing behaviour. The COVID-19 pandemic provides an opportunity to examine how consumer behaviour and fashion changes in uncertain times (Murphy et al., 2020). As an expression of society, it is also common for supportive and rebellious dress to emerge during challenging times, such as war-time rationed clothing of the 1940s (Tortora & Marcketti, 2015) or wearing patriotic symbols after 9/11 (Beyerlein & Sikkink, 2008).

There has been some research that has found traumatic societal events, such as 9/11 changed consumer attitudes which affected their consumption behaviour (Dube & Black, 2010). Saiki et al. (2012) found that under perceived stressful conditions women decreased use of accessories, maintaining hair, using fragrances, wearing make-up, and dressing formally. In a follow-up study with men, it was found these participants also neglected their appearances under stressful conditions by wearing less accessories and dressing informally Saiki et al. (2012).

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The COVID-19 pandemic provides a unique opportunity to understand how a traumatic global event impacts changes in dress habits. Tracking changes in dressing is significant to industry professionals in marketing, designing, and selling clothing. It also can serve as a starting point in predicting future trends. Theoretically, understanding how changes in dress habits due to the pandemic contributes to impression management and fashion theory will be resourceful. The purpose of this study was to assess the initial impact of the COVID-19 pandemic on dressing behaviour of a cross-section of the U.S. adult population.

## Related theory

Theories related to this study range from an individual's assessment of their dress, to communication theories or theories that explain interaction with others, and broader societal theories on fashion change. To begin, defining *dress* is pertinent. It is a term that is used to identify all appearance features including apparel (shoes, clothing, bags, etc.) and body alterations (e.g., exercising, make-up, etc.) (Barnes & Eicher, 1997). Concepts that explain the selection of dress include appearance management or the "attention, decisions, and acts related to personal appearance" (Kaiser, 1996, p. 5). It encompasses all dress items and activities engaged in creating an appearance (Lee & Johnson, 2009), such as choosing to wear a particular garment, taking a shower, restricting eating, and exercising.

This study relates to semiotics theory where a sender uses dress to communicate to another sender and then it is interpreted by the receiver of the message (Atkin, 2013; Damhorst, 2001). The viewer's response can impact the wearer. If it is a positive response, then the wearer will likely wear it more often. Meaning associated with dress cues are dynamic, with the receiver and sender negotiating these meanings (Tseïlon, 1992). Other researchers have noted that cultures have certain rules of dress related to attractiveness, level of fashion, and appropriateness to an occasion (Ganley, 2003).

Finally, this study examines the effects of a contextual event (COVID-19) on dressing habits. The context is important in interpreting and communicating through dress (Kaiser, 1996). Events in society, such as the COVID-19 pandemic, have an impact on dressing behaviours that emerge as broader fashion trends. Kaiser et al. (1995) examined what perpetuates change in appearance maintaining that there was a gap in explaining fashion change between individuals and society as a whole. Referencing scholars such as Blumer (1969), who analysed fashion change as a society, Davis' (1985, 1988) concept of ambivalence and the self in the field of semiotics, and Stone's concepts on appearance and the self; Kaiser et al. (1995) identified five principles of fashion change: 1) as society changes confusion or "ambivalence" rises, 2) the greater ambivalence prompts more appearance-modifying products; 3) as these appearance-modifying products increase, then consumers demonstrate greater variation in appearance styles; 4) if appearance styles are high in symbolic ambiguity, then meanings of styles will be negotiated through social interaction adopting meaningful styles, and 5) if these "meaningful styles" do not resolve ambiguity then the style will change. This cycle continually repeats.

## Review of literature

The COVID-19 pandemic abruptly changed daily life, having a significant impact on normal routine. The pandemic has prompted questions on maintaining employment, taking care of family, and staying healthy (Discovery Website, 2020). Changes to our daily lives include remote communication rather than face-to-face interactions, increased attention to cleanliness, and working at home. The global pandemic will change consumption behaviour during and after the virus has disappeared. Based on observations from past traumatic events including the 2008 recession and the 1918 influenza pandemic, Solomon (2020) observed that as a result of the pandemic, consumers will buy for gratification. As a result of being locked down, their pent-up demand builds which prompts purchases that enhance a sense of gratification and safety, such as comfort food, online education, and small luxury purchases. In addition, consumers will shop with "agency" or buy to maintain a sense of control, with behaviours such as stockpiling necessary basics (e.g., toilet paper), buying cleaning supplies, and shopping at contactless stores. Thirdly, consumers seek stability and conformity. Thus, purchases are made that inspire feelings of comfort and tradition. For example, disposable fast fashion will be replaced with high-quality clothing that lasts a long time (Solomon, 2020). Beyerlein and Sikkink (2008) examined consumer ethnocentrism, patriotism, time management, and attitude towards the regulation of business and product quality following the terrorist attacks. This study found significant differences in all of these areas. Both consumer ethnocentrism and consumer

patriotism increased as a result of these terrorist attacks. Support was found for American consumers becoming more favourable towards government regulation of business. The terrorist attacks made American consumers care more about product quality than they did before. In addition, consumers may feel more uncertain about their lives, their security and their longevity, so they had higher propensity for time management. Additionally, this trauma caused Americans to consider new priorities, such as putting more emphasis on family and pro-social activities while still trying to remain successful at their jobs. The findings of this research also suggest that the terrorist attacks may have had the opposite effect on American consumers than what the terrorists had originally intended. Rather than tearing the family apart with uncertainty, the family structure was strengthened. Rather than cause chaos in America, Americans learned to value their time more and to manage it better.

There are many examples of dress changes in times of uncertainty. For example, Buckland (2000) later analysed Kaiser's et al. (1995) theory of fashion change applying it to a historical analysis of changes in women's role and the meaning of pants in Akron, Ohio during World War II. The author concluded that as women adopted pants, there was a symbolic ambiguity in their appearance with more pant styles emerging, which prompted negotiations in the meanings of pants and eventual consumer acceptance. Given significant events, such as a pandemic, influences behaviour, the first research question is: **Did dressing behaviours change during the COVID-19 pandemic?**

Neglecting one's appearance is a sign of stress (The American Institute of Stress, 2020). Researchers have found among female college students that high anxiety and stressed personalities tend to participate in frequent appearance monitoring, relieving stress by managing their appearances. Participants with composed personalities managed their appearances as well for social reasons (Johnson et al., 2007). More transient than personality, mood has also been related to dressing style. Female participants in a workplace dress program (McLeod, 2003) reported increased self-esteem upon wearing appropriate workplace dress. Reilly and Rudd (2009) found social anxiety can result from women's lifestyle choices. Specifically, there was a correlation found between anxiety and using slenderising undergarments. There was anxiety also related to dieting. In addition, as anxiety increased, these women were more likely to participate in "nonroutine" procedures, such as purging and breast augmentation. They also found a negative anxiety and weight training and getting a haircut were related. Researchers have examined how perceived stress changed dressing habits. When under stress, these women participated less in dressing behaviours, such as wearing accessories, maintaining their hair, and using perfume. Kandiah et al. (2019) later found that stress affected men in a similar manner. The COVID-19 pandemic likely made individuals more stressed than usual. Given stress is associated with changes in dressing behaviours, the second research question is: **Will stress levels influence changes in dressing behaviour during the COVID-19 pandemic?**

Research on dress and appearance management has also focused on risky behaviours, such as restrictive dieting and exercising too much that lead to poor health (Lennon et al., 1999). For example, Johnson et al. (2014) found, among a sample of mostly females (over 80), that if body comparison is high, and body satisfaction is low, then women were more likely to engage in risky behaviours (extreme dieting, extreme cosmetic procedures). Research supports the notion that dress is often a part of enhancing positive self-image. Han et al. (2020) found among a sample of elderly Japanese adults that there were positive correlations between life satisfaction and appearance management. They used the statement "To what extent are you interested in dressing-up" as a measure of appearance management. This finding was stronger with women when compared with men. Kwon and Kwon (2013) studied multifaceted appearance management or appearance management given an individual's many roles. The authors examined the degree of multifaceted appearance management given gender, ethnicity, and age. They did not find differences in the general sample between men and women, but Caucasian women compared to men did participate in multifaceted appearance management. The results revealed that African Americans had a greater tendency to exhibit this multifaceted appearance management behaviour than Caucasian Americans. As predicted by the researchers, age did not influence the degree of multifaceted appearance management. Research on attention to appearance management is influenced by individual demographics. Therefore, the last research question is: **Will there be a difference among different demographic groups in dressing behaviour during the COVID-19 pandemic?**

## Method

After obtaining consent of the study protocol by the University's Institutional Review Board, a multi-item online survey that was approved for face and content validity by three experts was used to assess demographical characteristics and frequency of dressing behaviours of participants. Demographical information included gender, ethnicity, race, age, marital and employment status. Body mass index was calculated using participants' self-reported weight and height. A survey was used that included demographic questions (age, sex, race, ethnicity, region of residence, and employment status). To assess fashion behaviours, 43 item options were grouped in categories: accessories worn (e.g., earrings, watch), informal dress (e.g., t-shirt, sweatpants), formal dress (e.g., suit jackets, dress pants), protective dress (e.g., masks, gloves), hair practices (e.g., hair product, style hair), scent products (e.g., breath freshener, deodorant), make-up (e.g., eye-shadow, blush), and appearance enhancement (e.g., tanning, manicure). Equivalent items were created for male and female respondents (i.e., shirt versus blouse, respectively), but the make-up items were only shown to females. The section on the frequency of dressing behaviours had three options for the participants to respond. These options were: *dressing more during the pandemic—MT*, *dressing same as before—SAB the pandemic*, and *dressing less than before—LB the pandemic*. The survey was made available on Amazon Mechanical Turk (MTurk) during the last week of April 2020, which was six weeks after a national pandemic emergency was declared in the USA. Given the efficiency and pandemic related limitations and lockdowns (French et al., 2020) recently, the Amazon MTurk has been used as a reliable platform for survey dissemination and data collection in several US-based studies. Prior to the completion of the survey, participants were informed about the objective of the study and emphasised that their participation in the research was voluntary and anonymous.

The University's Institutional Review Board approved the study as exempt. Data were analysed using SPSS 25. Frequencies and percentages of responses to demographical characteristics were computed. Responses to dressing behaviours questions were computed as numbers and percentages. Finally, dressing behaviours were stratified by sociodemographic characteristics to assess group differences by using the chi-square test. Statistical significance was established at  $p < 0.05$ .

## Results

Of the 1,023 surveys completed via Amazon MTurk, 844 of the participants were residing in the USA. For this study, only responses for those residing in the USA were used. As shown in Table 1, the mean age for participants was 34.83 ( $SD = 11.79$ ) and mean BMI was 25.58 ( $SD = 5.45$ ). The majority of respondents were female (51.8%) and working full-time (56.8%). Many have been working from home due to the pandemic (62.9%) and few were healthcare workers (14.2%). The plurality of respondents were married (45.6%), and most were living with family members (71.6%). The majority of participants were Caucasians (63.2%), with Asians (22.9%), African Americans (6.6%), and multiracial and other (7.3%) comprising the other categories. The majority were also non-Hispanic (78.0%).

The internal consistency of the scales was measured by Cronbach's  $\alpha$ , with the eight fashion behaviour scales ranging from a low of .72 for Informal Dress and Scent Products to a high of .92 for Formal Dress, with a median coefficient of .78. The physical self-care scale had an internal consistency coefficient of .75, Emotional Self-Care scale was .84, and Psychological Self-Care scale was also .84. Three items concerned with fasting, restricted eating, and skipping meals formed a Restrictive Eating Behaviour scale with an internal consistency coefficient of .71. Scale means and internal consistency measures are shown in Table 2.

Table 1 Descriptive Statistics

Variables	N	%
Age	840	100.0%
BMI	801	100.0%
Underweight (< 18.5)	31	3.9%
Normal (18.5-24.9)	405	50.6%
Overweight (25.0-30.0)	231	28.8%
Obese (> 30.0)	134	16.7%
What is your sex?	844	100.0%
Female	437	51.8%
Male	407	48.2%
Your race?	844	100.0%
Asian	193	22.9%
African American	56	6.6%
Caucasian	533	63.2%
Multiracial	38	4.5%
Other	24	2.8%
Your ethnicity?	844	100.0%
Non-Hispanic	658	78.0%
Hispanic/Latino	186	22.0%
Marital status?	844	100.0%
Single	337	39.9%
Married	385	45.6%
Engaged or cohabitating	79	9.4%
Divorced / Widowed	43	5.1%
I live	844	100.0%
Alone	161	19.1%
With family	604	71.6%
With non-family members	79	9.4%
What is your current employment status?	844	100.0%
Not employed	189	22.4%
Part-time	176	20.9%
Full-time	479	56.8%
Have you been working from home during the current, lived COVID-19 pandemic?	844	100.0%
No	313	37.1%
Yes	531	62.9%
Are you a healthcare worker?	844	100.0%
No	724	85.8%
Yes	120	14.2%
Do you usually wear a uniform for your work?	844	100.0%
No	638	75.6%
Yes	206	24.4%
Were you required to participate in video conferencing for work during the current COVID-19 pandemic?	844	100.0%
Never	183	21.7%
Rarely	105	12.4%
Sometimes	285	33.8%
Always	131	15.5%
I am not working	140	16.6%
During past month of Covid-19 pandemic: Felt nervous and "stressed"?	844	100.0%
Never	67	7.9%
Almost never	120	14.2%
Sometimes	289	34.2%
Fairly often	235	27.8%
Often	133	15.8%

Table 2 Scale Descriptive Statistics

Scales (Items)	Cronbach's $\alpha$	N	M	SD
Accessories (9)		815	-0.37	0.42
Male	0.87	390	-0.35	0.44
Female	0.85	425	-0.4	0.4
Informal Dress (8)		814	0.07	0.41
Male	0.75	389	0.03	0.43
Female	0.69	425	0.11	0.39
Formal Dress (7)		815	-0.57	0.48
Male	0.92	390	-0.51	0.51
Female	0.9	425	-0.63	0.43
Protective Dress (2)		815	0.59	0.57
Male	0.77	390	0.54	0.59
Female	0.72	425	0.63	0.54
Hair (4)		815	-0.38	0.52
Male	0.82	390	-0.33	0.54
Female	0.79	425	-0.42	0.49
Scent Products (4)		815	-0.19	0.46
Male	0.78	390	-0.19	0.5
Female	0.64	425	-0.18	0.41
Make-up (6)				
Female	0.91	425	-0.55	0.48
Appearance (3)		815	-0.46	0.49
Male	0.77	390	-0.43	0.52
Female	0.73	425	-0.48	0.47
Self-Care				
Physical (10)	0.75	844	1.75	0.54
Emotional (10)	0.84	741	1.53	0.61
Psychological (7)	0.84	785	1.78	0.67
Restrictive Eating Behaviour (3)	0.71	844	-0.11	0.55

In a cross-tabulation of stress during the past month due to COVID-19 (low versus high) and gender, an association was found (continuity corrected  $\chi^2 = 6.94$ ,  $df = 1$ ,  $p = .008$ ), with 48.1% of females reporting high stress compared to 38.8% of males. Using independent  $t$ -tests to compare the fashion behaviour scales by stress, only Formal Dress showed a difference ( $t = 2.47$ ,  $df = 795.47$ ,  $p = .014$ ) with a larger decline in Formal Dress for those most with high stress (-0.62) compared to low stress (-0.54). Several gender differences were found, however, for Informal Dress ( $t = 2.90$ ,  $df = 812$ ,  $p = .004$ ), Formal Dress ( $t = -3.51$ ,  $df = 764.15$ ,  $p < .001$ ), Protective Dress ( $t = 2.31$ ,  $df = 788.14$ ,  $p = .021$ ), and Hair ( $t = -2.50$ ,  $df = 787.41$ ,  $p = .013$ ). For Informal and Protective Dress, females had higher increases (0.11 and 0.63, respectively) than males (0.03 and 0.54, respectively). The pattern for Formal Dress and Hair showed females with larger declines (-0.63 and -0.42, respectively) than males (-0.51 and -0.33, respectively).

Using a mixed model ANOVA, the fashion behaviours were run separately for each gender while controlling for stress. Only the main effects for fashion behaviours were found for females (*Pillai's Trace* = .76,  $F(7,417) = 190.40$ ,  $p < .001$ ) and males (*Pillai's Trace* = .62,  $F(6,382) = 105.23$ ,  $p < .001$ ). As shown in Figure 1, with zero indicating no change in the behaviour, females showed large declines for Formal Dress (-0.63), Make-up (-0.55), Appearance (-0.48), Hair (-0.42), and Accessories (-0.40), a large increase for Protective Dress (0.63), a decrease in Scent Products (-0.18), and a small increase for Informal Dress (0.11). For males, large declines were found for Formal Dress (-0.52), Appearance (-0.44), Accessories (-0.35), and Hair (-0.33), a large increase for Protective Dress (0.54), a decrease in Scent Products (-0.19), but no change in Informal Dress (0.03) (see Figure 2).

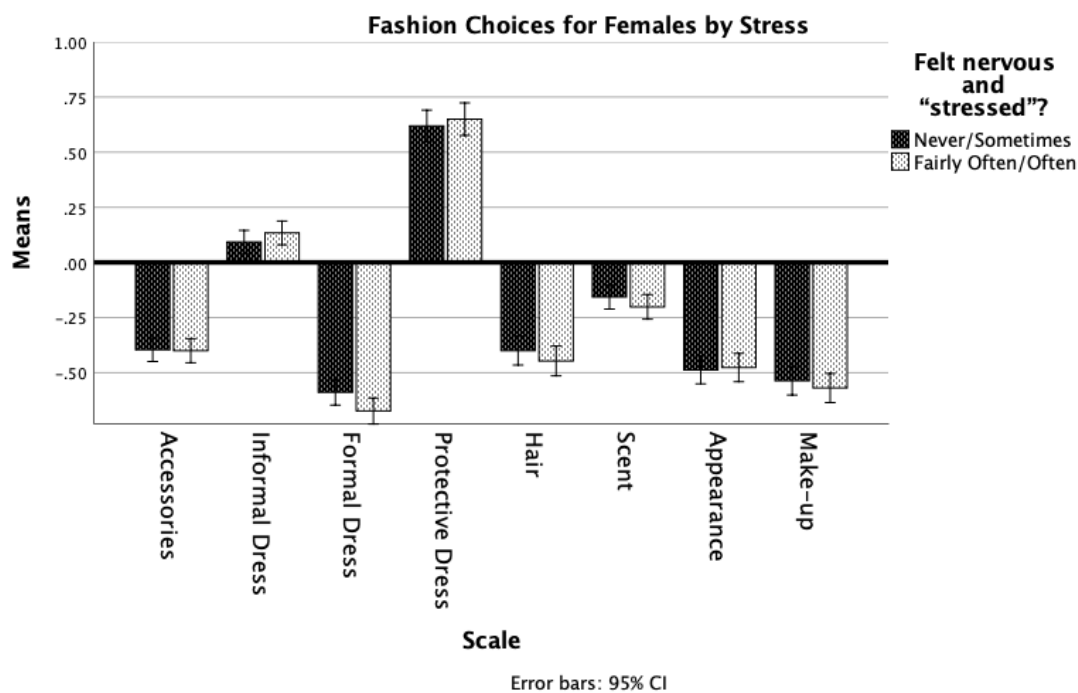


Figure 1 Fashion choices for females by stress levels

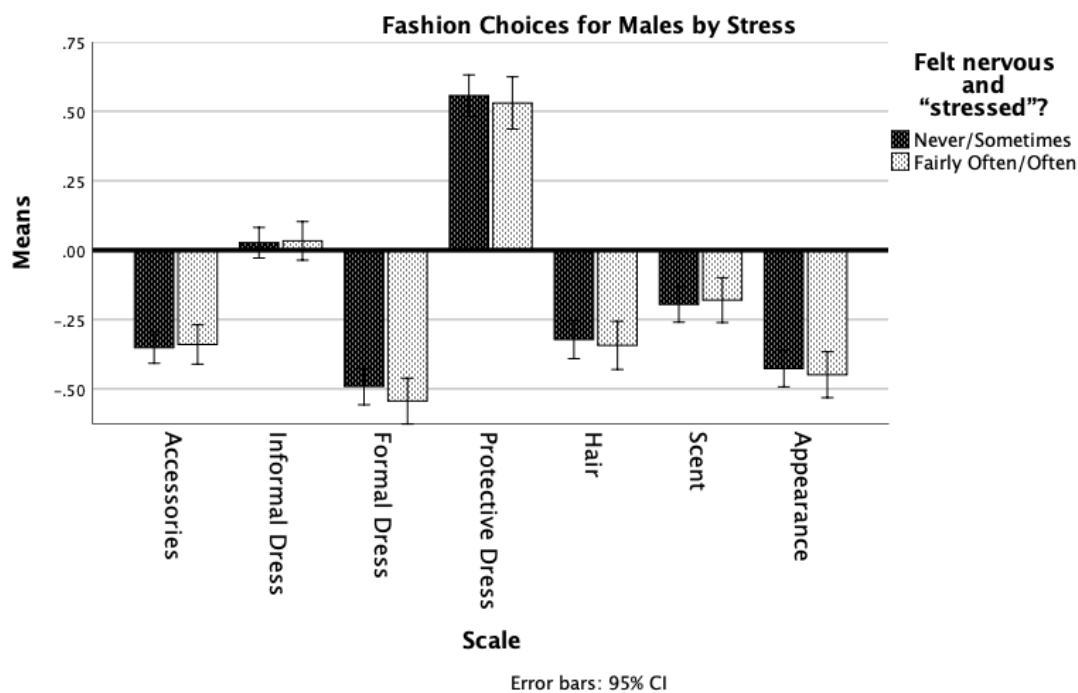


Figure 2 Fashion choices for males by stress levels

For each fashion behaviour scale, stress, demographic characteristics, the three self-care scales, and the restrictive eating behaviour scale were used as predictors in an ordinary least squares regression analysis. Except for race, which was dummy coded, categorical variables were dichotomised in order to be used as predictors. The regression coefficients are shown in Tables 3 through 10. All regression models for the fashion behaviour scales except Make-up were found to account for a statistically significant proportion of variance ( $p < .05$ ), ranging from 7% to 17% of the predicted variance in the scales.



For the Accessories scale, there were declines in the predicted values for Asians compared to Caucasians, single compared to married individuals, or as Emotional Self-Care increased. Predicted values for Accessories rose for those living alone, working in healthcare, wearing a uniform to work, and reporting more restrictive eating behaviours (see Table 3).

**Table 3** Regression Coefficients for Accessories Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
(Constant)	-0.36	0.14		-2.57	0.010
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.00	0.04	0.00	0.08	0.939
Age	0.00	0.00	0.08	1.78	0.075
What is your current employment status? (1 = FT)	-0.01	0.03	-0.02	-0.38	0.707
<b>Your race: Caucasian vs. Asian (1)</b>	<b>-0.17</b>	<b>0.04</b>	<b>-0.17</b>	<b>-3.93</b>	<b>&lt; .001</b>
Your race: Caucasian vs. African American (1)	-0.07	0.07	-0.04	-0.99	0.325
Your race: Caucasian vs. Multiracial (1)	-0.07	0.08	-0.04	-0.84	0.401
Your race: Caucasian vs. Other (1)	-0.16	0.11	-0.06	-1.49	0.137
Your ethnicity? (1 = Hispanic/Latino)	-0.01	0.05	-0.01	-0.24	0.810
BMI	0.00	0.00	0.02	0.42	0.678
<b>Marital status (1 = Single)</b>	<b>-0.1</b>	<b>0.04</b>	<b>-0.12</b>	<b>-2.52</b>	<b>0.012</b>
<b>I live (1 = Alone)</b>	<b>0.15</b>	<b>0.05</b>	<b>0.15</b>	<b>3.11</b>	<b>0.002</b>
<b>Are you a healthcare worker? (1 = Yes)</b>	<b>0.13</b>	<b>0.05</b>	<b>0.11</b>	<b>2.37</b>	<b>0.018</b>
<b>Do you usually wear a uniform for your work? (1 = Yes)</b>	<b>0.09</b>	<b>0.05</b>	<b>0.10</b>	<b>2.00</b>	<b>0.046</b>
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.01	0.04	0.01	0.21	0.834
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.04	0.04	-0.05	-1.13	0.259
What is your sex (1 = Male)	0.00	0.04	0.00	0.01	0.990
Physical Self-Care (higher score more self-care)	0.05	0.04	0.06	1.22	0.223
Psychological Self-Care (higher score more self-care)	0.02	0.04	0.03	0.55	0.583
<b>Emotional Self-Care (higher score more self-care)</b>	<b>-0.12</b>	<b>0.04</b>	<b>-0.19</b>	<b>-3.16</b>	<b>0.002</b>
<b>Restrictive Eating Behaviours (higher score more restrictive)</b>	<b>0.07</b>	<b>0.03</b>	<b>0.09</b>	<b>2.26</b>	<b>0.024</b>

$R^2 = .15$ ,  $F(20,529) = 4.60$ ,  $p < .001$

The Informal Dress scale showed decreased estimated values for Asians compared to Caucasians, and Hispanics compared to non-Hispanics. Increased values were predicted for those working from home or required to participate in video conferencing (see Table 4). Conversely, for the Formal Dress scale, declines in predicted values were found for those who felt stressed, were required to participate in video conferencing, or scored higher in Emotional Self-Care. Predicted scores were predicted to be higher for those who were employed, living alone, wearing a uniform, or reporting more restrictive eating (see Table 5).

**Table 4** Regression Coefficients for Informal Dress Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
(Constant)	-0.08	0.14		-0.56	0.576
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.02	0.04	0.02	0.49	0.622
Age	0.00	0.00	0.03	0.81	0.421
What is your current employment status? (1 = FT)	-0.01	0.03	-0.02	-0.36	0.722
<b>Your race: Caucasian vs. Asian (1)</b>	<b>-0.34</b>	<b>0.04</b>	<b>-0.33</b>	<b>-7.90</b>	<b>&lt; 0.001</b>
Your race: Caucasian vs. African American (1)	-0.11	0.07	-0.07	-1.68	0.093
Your race: Caucasian vs. Multiracial (1)	-0.10	0.08	-0.05	-1.23	0.218

Predictors	Coefficients				
	b	SE	$\beta$	t	p
Your race: Caucasian vs. Other (1)	-0.04	0.11	-0.02	-0.38	0.701
<b>Your ethnicity? (1 = Hispanic/Latino)</b>	<b>-0.11</b>	<b>0.05</b>	<b>-0.10</b>	<b>-2.29</b>	<b>0.022</b>
BMI	0.00	0.00	0.02	0.48	0.633
Marital status (1 = Single)	-0.02	0.04	-0.03	-0.58	0.563
I live (1 = Alone)	0.08	0.05	0.07	1.57	0.117
Are you a healthcare worker? (1 = Yes)	0.00	0.06	0.00	-0.08	0.939
Do you usually wear a uniform for your work? (1 = Yes)	-0.02	0.05	-0.02	-0.36	0.720
<b>Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)</b>	<b>0.09</b>	<b>0.04</b>	<b>0.09</b>	<b>2.08</b>	<b>0.038</b>
<b>Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)</b>	<b>0.10</b>	<b>0.04</b>	<b>0.12</b>	<b>2.65</b>	<b>0.008</b>
What is your sex (1 = Male)	-0.05	0.04	-0.06	-1.34	0.180
Physical Self-Care (higher score more self-care)	-0.02	0.04	-0.02	-0.47	0.636
Psychological Self-Care (higher score more self-care)	0.00	0.04	0.00	0.02	0.981
Emotional Self-Care (higher score more self-care)	0.07	0.04	0.11	1.80	0.073
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.03	0.06	1.49	0.137

$R^2 = .17$ ,  $F(20,529) = 5.94$ ,  $p < .001$

Table 5 Regression Coefficients for Formal Dress Scale

Predictors	Coefficients				
	b	SE	$\beta$	t	p
(Constant)	-0.65	0.16		-4.05	< 0.001
<b>During past month of Covid-19 pandemic: Felt nervous and "stressed"? (1 = Stressed)</b>	<b>-0.08</b>	<b>0.04</b>	<b>-0.09</b>	<b>-2.02</b>	<b>0.044</b>
Age	0.00	0.00	0.01	0.20	0.840
<b>What is your current employment status? (1 = FT)</b>	<b>0.08</b>	<b>0.03</b>	<b>0.11</b>	<b>2.50</b>	<b>0.013</b>
Your race: Caucasian vs. Asian (1)	0.03	0.05	0.02	0.54	0.589
Your race: Caucasian vs. African American (1)	-0.12	0.08	-0.07	-1.64	0.102
Your race: Caucasian vs. Multiracial (1)	0.06	0.09	0.03	0.63	0.532
Your race: Caucasian vs. Other (1)	-0.20	0.12	-0.07	-1.59	0.112
Your ethnicity? (1 = Hispanic/Latino)	0.04	0.05	0.04	0.84	0.400
BMI	0.00	0.00	0.01	0.34	0.732
Marital status (1 = Single)	-0.07	0.05	-0.08	-1.58	0.114
<b>I live (1 = Alone)</b>	<b>0.14</b>	<b>0.06</b>	<b>0.12</b>	<b>2.49</b>	<b>0.013</b>
Are you a healthcare worker? (1 = Yes)	0.11	0.06	0.08	1.83	0.068
<b>Do you usually wear a uniform for your work? (1 = Yes)</b>	<b>0.21</b>	<b>0.05</b>	<b>0.19</b>	<b>3.97</b>	<b>&lt; 0.001</b>
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.02	0.05	-0.02	-0.46	0.648
<b>Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)</b>	<b>-0.13</b>	<b>0.04</b>	<b>-0.14</b>	<b>-3.04</b>	<b>0.002</b>
What is your sex (1 = Male)	0.04	0.04	0.04	0.97	0.334
Physical Self-Care (higher score more self-care)	0.04	0.05	0.04	0.82	0.414
Psychological Self-Care (higher score more self-care)	0.07	0.04	0.09	1.63	0.104
<b>Emotional Self-Care (higher score more self-care)</b>	<b>-0.12</b>	<b>0.04</b>	<b>-0.17</b>	<b>-2.90</b>	<b>0.004</b>
<b>Restrictive Eating Behaviours (higher score more restrictive)</b>	<b>0.08</b>	<b>0.04</b>	<b>0.09</b>	<b>2.12</b>	<b>0.035</b>

$R^2 = .16$ ,  $F(20,529) = 4.98$ ,  $p < .001$

The Protective Dress scale, which showed a large increase overall due to the pandemic, had lower predicted values for those who were employed, had lower BMI values, or were healthcare workers. Predicted values were increased for those with higher Emotional Self-Care. For the Hair scale, increased estimated values were found for those who were healthcare workers or needed to wear a uniform for work. The Scent Products scale showed declines in predicted values for those who were Asians compared to Caucasians, while there were increases for those wearing uniforms to work (see Tables 6, 7, 8).

**Table 6** Regression Coefficients for Protective Dress Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
(Constant)	0.65	0.19		3.38	0.001
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.02	0.05	0.02	0.34	0.731
Age	0.00	0.00	0.01	0.23	0.820
<b>What is your current employment status? (1 = FT)</b>	<b>-0.08</b>	<b>0.04</b>	<b>-0.09</b>	<b>-2.06</b>	<b>0.040</b>
Your race: Caucasian vs. Asian (1)	-0.08	0.06	-0.06	-1.32	0.187
Your race: Caucasian vs. African American (1)	0.01	0.09	0.01	0.16	0.870
Your race: Caucasian vs. Multiracial (1)	0.05	0.11	0.02	0.40	0.691
Your race: Caucasian vs. Other (1)	0.14	0.15	0.04	0.94	0.348
Your ethnicity? (1 = Hispanic/Latino)	-0.01	0.06	-0.01	-0.13	0.900
<b>BMI</b>	<b>-0.01</b>	<b>0.00</b>	<b>-0.10</b>	<b>-2.23</b>	<b>0.026</b>
Marital status (1 = Single)	-0.01	0.06	-0.01	-0.16	0.872
I live (1 = Alone)	-0.09	0.07	-0.07	-1.34	0.180
<b>Are you a healthcare worker? (1 = Yes)</b>	<b>-0.16</b>	<b>0.08</b>	<b>-0.10</b>	<b>-2.17</b>	<b>0.031</b>
Do you usually wear a uniform for your work? (1 = Yes)	0.08	0.06	0.06	1.20	0.230
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.08	0.06	0.06	1.28	0.201
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.28	0.783
What is your sex (1 = Male)	-0.04	0.05	-0.03	-0.76	0.446
Physical Self-Care (higher score more self-care)	0.04	0.06	0.04	0.77	0.444
Psychological Self-Care (higher score more self-care)	0.03	0.05	0.04	0.61	0.539
<b>Emotional Self-Care (higher score more self-care)</b>	<b>0.11</b>	<b>0.05</b>	<b>0.14</b>	<b>2.24</b>	<b>0.026</b>
Restrictive Eating Behaviours (higher score more restrictive)	0.00	0.04	0.00	0.02	0.987

$R^2 = .09$ ,  $F(20,529) = 2.56$ ,  $p < .001$

**Table 7** Regression Coefficients for Hair Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
(Constant)	-0.74	0.18		-4.04	< 0.001
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.07	0.05	-0.06	-1.38	0.167
Age	0.00	0.00	0.03	0.73	0.468
What is your current employment status? (1 = FT)	0.03	0.04	0.03	0.71	0.477
Your race: Caucasian vs. Asian (1)	-0.06	0.06	-0.05	-1.10	0.270
Your race: Caucasian vs. African American (1)	-0.07	0.09	-0.04	-0.85	0.395
Your race: Caucasian vs. Multiracial (1)	0.04	0.11	0.02	0.37	0.712
Your race: Caucasian vs. Other (1)	-0.12	0.14	-0.04	-0.87	0.386
Your ethnicity? (1 = Hispanic/Latino)	0.00	0.06	0.00	-0.05	0.963
BMI	0.00	0.00	0.02	0.46	0.649
Marital status (1 = Single)	0.00	0.05	0.00	-0.05	0.959

Predictors	Coefficients				
	b	SE	$\beta$	t	p
I live (1 = Alone)	0.09	0.06	0.07	1.45	0.148
<b>Are you a healthcare worker? (1 = Yes)</b>	<b>0.21</b>	<b>0.07</b>	<b>0.14</b>	<b>2.92</b>	<b>0.004</b>
<b>Do you usually wear a uniform for your work? (1 = Yes)</b>	<b>0.13</b>	<b>0.06</b>	<b>0.10</b>	<b>2.11</b>	<b>0.035</b>
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.01	0.06	0.01	0.19	0.850
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.14	0.893
What is your sex (1 = Male)	0.05	0.05	0.04	1.00	0.317
Physical Self-Care (higher score more self-care)	0.10	0.05	0.10	1.94	0.053
Psychological Self-Care (higher score more self-care)	0.09	0.05	0.10	1.78	0.076
Emotional Self-Care (higher score more self-care)	-0.09	0.05	-0.11	-1.82	0.069
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.04	0.05	1.11	0.267

$R^2 = .09$ ,  $F(20,529) = 2.52$ ,  $p < .001$

**Table 8** Regression Coefficients for Scent Products Scale

Predictors	Coefficients				
	b	SE	$\beta$	t	p
(Constant)	-0.60	0.16		-3.69	0.000
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.01	0.04	0.01	0.15	0.880
Age	0.00	0.00	0.03	0.72	0.475
What is your current employment status? (1 = FT)	0.04	0.03	0.06	1.24	0.217
<b>Your race: Caucasian vs. Asian (1)</b>	<b>-0.11</b>	<b>0.05</b>	<b>-0.09</b>	<b>-2.11</b>	<b>0.035</b>
Your race: Caucasian vs. African American (1)	0.05	0.08	0.03	0.59	0.557
Your race: Caucasian vs. Multiracial (1)	-0.07	0.10	-0.03	-0.69	0.489
Your race: Caucasian vs. Other (1)	-0.17	0.13	-0.06	-1.33	0.184
Your ethnicity? (1 = Hispanic/Latino)	0.04	0.05	0.03	0.69	0.489
BMI	0.00	0.00	0.04	0.85	0.398
Marital status (1 = Single)	-0.04	0.05	-0.04	-0.77	0.442
I live (1 = Alone)	0.08	0.06	0.07	1.33	0.183
Are you a healthcare worker? (1 = Yes)	0.09	0.06	0.07	1.46	0.144
<b>Do you usually wear a uniform for your work? (1 = Yes)</b>	<b>0.13</b>	<b>0.05</b>	<b>0.12</b>	<b>2.48</b>	<b>0.013</b>
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.14	0.885
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.03	0.04	-0.03	-0.73	0.464
What is your sex (1 = Male)	-0.02	0.04	-0.03	-0.56	0.573
Physical Self-Care (higher score more self-care)	0.09	0.05	0.10	1.82	0.069
Psychological Self-Care (higher score more self-care)	0.02	0.04	0.03	0.51	0.608
Emotional Self-Care (higher score more self-care)	0.02	0.04	0.03	0.54	0.587
Restrictive Eating Behaviours (higher score more restrictive)	0.03	0.04	0.03	0.75	0.455

$R^2 = .07$ ,  $F(20,529) = 2.10$ ,  $p = .004$

The Appearance scale had decreases in predicted values for Asians compared to Caucasians, but increases for those who were healthcare workers, wearing a uniform, higher on Physical Self-Care, or more restrictive in eating (see Table 9). As demonstrated in Table 10, the overall regression model for the Make-up scale was not found to be statistically significant, but there was a predicted decline in values for those who were African Americans compared to Caucasians.

Table 9 Regression Coefficients for Appearance Scale

Predictors	Coefficients				
	b	SE	$\beta$	t	p
(Constant)	-0.62	0.17		-3.66	0.000
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.02	0.04	-0.02	-0.51	0.608
Age	0.00	0.00	-0.03	-0.59	0.557
What is your current employment status? (1 = FT)	0.02	0.03	0.03	0.73	0.466
<b>Your race: Caucasian vs. Asian (1)</b>	<b>-0.16</b>	<b>0.05</b>	<b>-0.14</b>	<b>-3.17</b>	<b>0.002</b>
Your race: Caucasian vs. African American (1)	-0.02	0.08	-0.01	-0.29	0.772
Your race: Caucasian vs. Multiracial (1)	-0.16	0.10	-0.07	-1.62	0.107
Your race: Caucasian vs. Other (1)	-0.06	0.13	-0.02	-0.48	0.629
Your ethnicity? (1 = Hispanic/Latino)	-0.04	0.05	-0.03	-0.67	0.502
BMI	0.01	0.00	0.08	1.86	0.063
Marital status (1 = Single)	-0.07	0.05	-0.07	-1.34	0.179
I live (1 = Alone)	0.11	0.06	0.09	1.91	0.057
<b>Are you a healthcare worker? (1 = Yes)</b>	<b>0.16</b>	<b>0.07</b>	<b>0.11</b>	<b>2.39</b>	<b>0.017</b>
<b>Do you usually wear a uniform for your work? (1 = Yes)</b>	<b>0.12</b>	<b>0.06</b>	<b>0.11</b>	<b>2.19</b>	<b>0.029</b>
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.05	0.05	0.04	0.97	0.330
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	0.00	0.05	0.00	-0.08	0.933
What is your sex (1 = Male)	-0.01	0.04	-0.01	-0.29	0.769
<b>Physical Self-Care (higher score more self-care)</b>	<b>0.10</b>	<b>0.05</b>	<b>0.10</b>	<b>2.02</b>	<b>0.044</b>
Psychological Self-Care (higher score more self-care)	-0.01	0.05	-0.02	-0.29	0.772
<b>Emotional Self-Care (higher score more self-care)</b>	<b>-0.12</b>	<b>0.04</b>	<b>-0.17</b>	<b>-2.74</b>	<b>0.006</b>
<b>Restrictive Eating Behaviours (higher score more restrictive)</b>	<b>0.11</b>	<b>0.04</b>	<b>0.12</b>	<b>3.02</b>	<b>0.003</b>

$R^2 = .13$ ,  $F(20,529) = 3.96$ ,  $p < .001$

Table 10 Regression Coefficients for Make-up Scale for Females Only

Predictors	Coefficients				
	b	SE	$\beta$	t	p
(Constant)	-0.51	0.26		-1.98	0.049
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.07	0.07	-0.07	-1.07	0.284
Age	0.00	0.00	-0.01	-0.16	0.872
What is your current employment status? (1 = FT)	0.05	0.05	0.07	1.02	0.307
Your race: Caucasian vs. Asian (1)	-0.04	0.09	-0.03	-0.43	0.670
Your race: Caucasian vs. African American (1)	-0.33	0.13	-0.17	-2.53	0.012
Your race: Caucasian vs. Multiracial (1)	-0.07	0.15	-0.03	-0.45	0.656
Your race: Caucasian vs. Other (1)	0.05	0.21	0.02	0.23	0.816
Your ethnicity? (1 = Hispanic/Latino)	0.03	0.10	0.02	0.29	0.770
BMI	0.00	0.01	-0.01	-0.09	0.925
Marital status (1 = Single)	-0.09	0.07	-0.09	-1.20	0.233
I live (1 = Alone)	0.10	0.09	0.08	1.07	0.288
Are you a healthcare worker? (1 = Yes)	0.05	0.10	0.03	0.45	0.656
Do you usually wear a uniform for your work? (1 = Yes)	0.09	0.10	0.08	0.96	0.339
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.01	0.08	-0.01	-0.07	0.945
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.07	-0.01	-0.18	0.855

Predictors	Coefficients				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Physical Self-Care (higher score more self-care)	0.08	0.08	0.09	1.12	0.265
Psychological Self-Care (higher score more self-care)	0.04	0.07	0.05	0.55	0.584
Emotional Self-Care (higher score more self-care)	-0.12	0.07	-0.16	-1.83	0.068
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.06	0.06	0.93	0.353

$R^2 = .09$ ,  $F(19,237) = 1.20$ ,  $p = .261$

## Discussion

The purpose of this study was to examine dressing behaviour during the COVID-19 pandemic. The study provides unique data, because it was collected at a time when the lockdowns were established in the United States, April 2020. The results supported the first research question, demonstrating that dressing behaviour changed during the COVID-19 pandemic. Overall, during the pandemic participants engaged in less dressing behaviours wearing less accessories, applying less make-up, and using less hair and scent products. Participants also dressed informal clothing (e.g., jeans, t-shirts) and incorporated protective dress during the pandemic. These results support previous research that casual clothing and wearing less accessories and scent products were associated with stress (e.g., Saiki et al., 2012). In addition, these findings may indicate that the participants were engaged with comforting behaviour by wearing more casual clothing. Outcomes from this research varied from Solomon's (2020) assertions about consumer behaviour changes as a result of the COVID-19 pandemic. Instead of gravitating towards luxury, participants were more interested in wearing informal, casual clothing. In addition, participating in less dressing behaviour and perhaps having a more natural appearance might be the "rebellious" dress that tends to emerge during stressful events in history (Tortora & Marcketti, 2015). Similar to reports on other traumatic events, the pandemic could have refocused attention on the family rather than appearance related behaviour (Beyerlein & Sikkink, 2008). As with patriotic dress and the feelings after 9/11 (Beyerlein & Sikkink, 2008), wearing protective dress (masks and gloves) might have been seen as support and safety for the country and others. The decision to wear protective dress was also an individual preference. The results demonstrated that a higher score on the Emotional Self-Care Scale predicted wearing of protective dress.

The second research question was also supported because stress levels related to changes in dressing behaviour occurred during the COVID-19 pandemic. Participants indicating higher stress levels tended to wear less Formal Dress during the pandemic than prior to it. These results support the suggestion by The American Institute of Stress (2020) that neglecting one's appearance is a sign of stress.

Several findings reinforce the third research question, demonstrating demographics groups varied in dressing behaviour during the COVID-19 pandemic. More females than males experienced higher stress during the pandemic. Women changed their dressing habits more than men with regards to wearing more informal dress, less formal dress, using less hair products and services, and wearing more protective dress. The finding reconfirms Kwon and Kwon (2013) results that women participated more than men in "multifaceted appearance management" given an individual's many roles. The findings back popular commentary and research that indicates women when compared to men were more affected by the COVID-19 pandemic (e.g., Hoff, 2021; Lewis, 2021). Women generally make lower wages and are the caretakers of children, therefore they were more likely to stay at home during the pandemic. This tremendous interruption in their daily lives likely contributed to stressful feelings that was reflected in their appearances. Reilly and Rudd (2009) found having a haircut was associated with relieving anxiety. Due to the lockdown and social distancing, women were unable to visit a hair salon. Additionally, Reilly and Rudd observed that anxiety prompted participants to engage in "non-routine" behaviours. In this study, wearing formal dress may have been part of a routine that was changed with the stress of the pandemic.

There were also some differences among ethnic groups. Decline in wearing accessories was more predictive for Caucasians than non-Hispanics and Asians. For the Asian population, wearing make-up was not found to decrease as with African Americans and Caucasians.

Additionally, lifestyle variables impacted dressing behaviour during the COVID-19 pandemic. For Informal Dress, increased values were predicted for those working from home or required to participate in video conferencing. The opposite was true for formal dress. While participants who actually went to work, (e.g., wore a uniform or worked in health care) and lived alone (e.g., wearing accessories and scent products) predicted increasing wearing formal dress during the pandemic.

### **Implications, conclusions, and future research**

This research has several scholarly and practical implications. Theoretically, this paper contributes to an understanding of communication theory. The research validates changes in dressing cues and dress rules during a significant event. It was definitely a time of “ambivalence”, as described in fashion theory (Kaiser et al., 1995). Each category of dress in the survey was affected during the pandemic, indicating that this ambivalence did prompt more appearance modification. Future studies could examine this process of fashion change during the pandemic through content analysis of product availability. Perhaps the meanings of these dress items will prompt change. For example, informal dress might be interpreted differently post-COVID pandemic.

In practice, the results can be part of determining stress (e.g., wearing informal dress), which can prompt intervention. In addition, different consumer groups could be targeted for campaigns. For example, businesses selling formal clothing could be designed to provide the comfort of informal clothing. Informal clothing can capitalise on these moments. In another example, accessories could be marketed to Asian and those living alone. Wearing masks was associated with high emotional self-care. Therefore, self-care could be incorporated in promoting mask-wearing.

Overall, the results record a unique point in time when a significant historical event occurred. It provides an understanding of how dressing habits and meanings of dress changed during the COVID-19 pandemic in the United States. Further research could include conducting a longitudinal analysis of fashion change by collecting data with the same survey after the pandemic ends. In addition, dressing behaviours can be assessed in different regions of the world, which can be compared to the results from this study.

### **Author biographies**

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