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Outi Sarpila  
Aki Koivula  
Iida Kukkonen

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## **Occupation-congruent appearance: a measurement approach**

*Outi Sarpila* (corresponding author)

INVEST Research Flagship

University of Turku

Assistentinkatu Street 9

20500 Turku, Finland

*Aki Koivula*

Economic Sociology/Department of Social Research

University of Turku

Assistentinkatu Street 9

20500 Turku, Finland

*Iida Kukkonen*

Economic Sociology/Department of Social Research

University of Turku

Assistentinkatu Street 9

20500 Turku, Finland

## Occupation-congruent appearance: a measurement approach

### Abstract

In this article we introduce a novel measure, which we call ‘occupation-congruent appearance’ (OCA). We argue that the measure captures the appearance norms of looking ‘right’ for a particular occupation. Using a combination of large-scale photograph data (N=1,411) and rating data (N=7,920) from Finland, including 387,542 individual ratings, we show that shared cultural standards for OCA exist, and rate of agreement compares with agreement on beauty standards. We systematically compare the relationship between OCA, attractiveness, and masculinity/femininity in male-dominated, gender-balanced, and female-dominated occupational fields for men and for women. We conclude that occupation-congruent appearance is independent from other typically used measures in studies on appearance and social inequalities. Thus, it seems that OCA can capture the kind of elements of appearance that are not reducible to attractiveness, femininity, and masculinity. We discuss the possibilities for using OCA as a complementary measure for researchers interested in appearance and social inequalities.

### Introduction

During the past decade sociologists have become increasingly interested in the role of physical appearance in shaping social inequalities. Particular attention has been paid to economic inequalities and working life-related outcomes of *physical attractiveness* as one dimension of physical appearance. In this realm of research, scholars have widely argued that people very much agree on what is beautiful and that physical attractiveness brings advantages to many, but to whom and in what contexts is however less clear (for reviews, see Hamermesh 2011; Maestripieri et al. 2017). More specifically, recent research suggest that different evaluative logics of physical attractiveness apply to men and women, and that these evaluations are informed not only by gender of the person who is being evaluated but also cultural stereotypes of the particular occupation the person represents (Paustian-Underdahl and Walker 2016; Kuwabara and Thébaud 2017; Vandebroek 2017; cf. Kuipers 2015). Given that previous research has shown that attractiveness as a one dimension of physical appearance can increase occupational ‘lack of fit’ for women in male-dominated occupations (Heilman and Eagly 2008; Johnson et al. 2010; Paustian-Underdahl and Walker 2016; Kuwabara and Thébaud 2017), physical attractiveness seems an inadequate measure in the study of physical appearance-related inequalities in occupational contexts. In other words, there seems to be a clear need for developing more gender-specific complementary measures of physical appearance, alongside attractiveness, to understand and study physical appearance -related labor markets inequalities more profoundly.

This paper contributes to this expanding body of research on physical appearance and labor market inequalities by introducing and empirically studying a novel measure, which we call ‘occupation-congruent appearance’ (OCA), that is looking ‘right’ for a particular occupation (cf. Warhurst and Nickson 2020). The measure of occupation-congruent appearance stems from an idea that there are culturally shared appearance norms concerning how representatives of different occupation are expected to look. More specifically, we argue that there are culturally shared standards of how representatives of different occupations are expected to look, not just in terms of attractiveness, masculinity and femininity, but also in respect of styles of grooming, clothing and presenting oneself, which go beyond the typically measured and used dimensions of physical appearance (i.e. attractiveness, masculinity and femininity). Our key objective is to investigate to what extent people agree on other individuals’ occupation-appearance congruency, whether the level of agreement meets the level of agreement on widely used appearance-based

measures of attractiveness, masculinity and femininity and to identify the (in)dependence of our novel measure from the measures traditionally used in appearance-based stratification research. While prior research has focused predominately on attractiveness, our main interests lies with examining other possibilities to capture what is expected appearance-wise from male and female representatives of different occupations.

In order to study the prevalence of culturally shared occupational appearance standards, we collected an image data of 1,415 individuals representing a heterogenous collection of different occupations in Finland. The pictures were rated by over 7,000 individuals based on random sampling from the population register. These data enables us to study the existence of OCA among male and female representatives of different occupations and to systematically compare the relationship between OCA and attractiveness in male-dominated, gender-balanced, and female-dominated occupational fields.

The analysis is guided by the following research questions:

- 1) To what extent can we find shared cultural standards for occupational appearance for men and for women?
- 2) To what extent is OCA an independent measure from attractiveness for men and for women?
- 3) How does the relationship between OCA and attractiveness vary for men and women in male-dominated, gender-balanced, and female-dominated occupational fields.

The article starts by introducing central theoretical perspectives on classification and physical appearance in terms of occupational context. Here we draw on cultural sociology, as well as theories of status beliefs in sociology and gender stereotype literature in social psychology. Then we give an overview of previous studies on the significance of physical attractiveness for men and women in different occupations. Next, we present our unique and high-quality image and rating data. We then move on to presenting our results, and finally discuss the empirical possibilities of the measure of occupation-congruent physical appearance. We argue occupation-congruent appearance can capture occupational appearance standards that cannot be studied by using measures of attractiveness, masculinity and femininity only.

### **Occupation-congruent appearance: background**

When people are asked to evaluate a person's correspondence in a portrait photo to their idea of a representative of a specific occupation, on what is this type of evaluation based? First, research in social cognition suggests that people have a built-in tendency to evaluate each other on the basis of physical appearance. Physical appearance serves as the main informational source particularly in situations where people have limited information about the other person (for a review see, Hosoda, Stone-Romero, and Coats 2003). Therefore under the circumstances where people are given a photo of an unknown person, the evaluation is solely based on what the evaluators see in front of their eyes, that is the appearance of the unknown person.

The evaluation process in itself can be approached as a part of a broader process of classification, which is a dual process where people start to both categorize and evaluate the person in the photo. Categorization refers to the process of assessing the wider categories of people the person is part of (i.e. 'what is this?') (Lamont 2012; Kuipers and Franssen 2020:143), whereas evaluation means assessing to what extent the person is a good or bad representative of that category (i.e. 'is this a successful example of this category or not?') (Kuipers and Franssen 2020:159). Physical attributes that are easily observed from individual's physical appearance on which individuals differ from each other, and faces in particular, form the basis of categorization and evaluation (Ridgeway et al. 1998; Todorov 2012).

Gender is this type of observable attribute. Therefore, when people evaluate another person's congruency with the image of a representative of certain occupation, they most likely start with categorizing the perceived gender of the person in a picture. According to Cecilia Ridgeway's theory of status beliefs, gender is the primary cultural frame on the basis of which people classify each other (Ridgeway 2014). Ridgeway has convincingly argued with her colleagues (e.g., Ridgeway and Correll 2004; Ridgeway et al. 2009; Ridgeway 2011; Ridgeway 2014) how in social interactions cultural beliefs about gender are activated and help reproduce gender inequalities. This happens because on the basis of gendered cultural beliefs, people assume an individual of a certain gender to be a certain type of person and to act in a certain way. Hence, cultural beliefs about gender affect how people act towards other people and how people expect the members of different gender categories to be and act. Cultural beliefs are shared stereotypes the significance of which actualizes in social situations as people combine social categories with evaluative judgments (e.g., Ridgeway and Correll 2004; Ridgeway 2011). Gender but also race and class-based lifestyles are coded into widely shared better–inferior -scales, that is status beliefs. Durable inequalities persist as people from certain social categories become continuously interpreted not only as representatives of certain groups (i.e. women, black, working-class) but also as members of groups with less capabilities needed, for example, in certain occupations (for a review, see Ridgeway 2014). For example, it is widely recognized that employers are inclined to use gender stereotypes as they compare male and female candidates, and to evaluate the congruency of these stereotypical characteristics to the cultural schema of attributes required for a certain job (e.g., Gorman 2005).

In terms of occupation-congruent appearance evaluations, we can expect ordinary people to do similar comparisons: to categorize the person in the photograph according to gender and compare that to the cultural schema of characteristics expected in a particular occupation. According to (socio-)psychological research on occupational classifications, the schema of required characteristics stems strongly from the gender-type of an occupation. More specifically, Linda Gottfredson (1981) has argued that the spontaneous classification of occupations is based on two dimensions in particular: prestige and gender-type. According to her, people perceive and classify occupations fairly similarly based on these two dimensions regardless of their social, economic and ethnic background. In more recent research on occupational stereotypes, occupational classification has been considered more multi-dimensional. It is widely suggested that occupational classifications are to some extent rooted in the actual gender segregation of occupations (proportions of men and women in different occupations) but also in cultural contexts and beliefs about occupation-specific personality traits, skill requirements, as well as physical characteristics stereotypically attached to different occupations (e.g., Shinar 1975; Glick, Wilk, and Perreault 1995; Cejka and Eagly 1999). As it would be absurd to assume that ordinary people are familiar with occupational statistics, at least those regarding less familiar occupations, it is clear that cultural representations of different occupations also play a role in occupational classification. Not only the extent to which people confront representatives of certain occupations (and the categories they represent) but also how different occupations are socially represented affect the ways people classify occupations. (e.g., Boltanski and Thévenot 1983). In terms of social inequality, gender-typing is problematic because it makes representatives of different genders less or more probably perceived as representatives of different occupations by dividing occupations into female-type and male-type categories.

Previous research on occupational classifications puts a lot of emphasis on gender-typing through roles and tasks that are stereotypically considered relevant in certain occupations. Female-type and male-type occupational categories become reinforced as skills or traits considered relevant to certain occupations are 'naturally' combined with either femininity or

masculinity. This is exacerbated by the fact that people tend to endorse congruency. In the labor market context, it has been found that gender per se defines how qualified an applicant is considered when applying for a job that is considered typical for the opposite gender, and this applies for both male and female applicants (for a review see Davison and Burke 2000). As stated by the 'lack of fit' model by Madeline Heilman (1983; 2001), women, in particular, are discriminated on the labor market when the attributes that are stereotypically considered more feminine (such as warmth and niceness) do not fit with the stereotype of an occupation that a woman is applying for or working in (such as manager).

Indeed, the gender-typing of occupations relates to physical appearance, as attributes of physical appearance can be used as cues for occupational (in)congruency. Previous research on physical attractiveness and labor market success provides some indications of the role of attractiveness in appearance-related occupational (in)congruency.

For example, the lack of fit -model (Heilman 1983; 2001) discussed earlier provides tools to understand how gender, attractiveness and occupation might interact in occupational classifications. According to earlier empirical findings, physical attractiveness enhances lack of fit i.e. occupational incongruency for women in certain occupations. According to Heilman's and Saruwatari's (1979) research, the connection between attractiveness and 'lack of fit' varies according to gender and the status of the job: for women attractiveness increases fit in low-status jobs but decreases fit in high-status jobs, but for men attractiveness does not seem to affect fit in either of these two positions. A more recent study by Johnson et al. (2010) that tracked down the detrimental consequences of beauty for women concludes that female attractiveness decreases fit in male-dominated jobs for which physical appearance is considered 'unimportant' part of the job. In similar vein, other recent studies suggest that attractiveness erodes women's perceived agency (Paustian-Underdahl and Walker 2016) and increases their perceived femininity, feeding the idea of lack of fit for women in male-dominated occupations (Heilman and Eagly 2008; Kuwabara and Th  baud 2017).

All in all, occupation-congruent appearance may therefore be correlated with attractiveness for women. In addition, we might expect to find the association between attractiveness and 'occupation-congruent appearance' to be positive for women in female-dominated occupations and negative in male-dominated occupations.

However, previous empirical research is far from consistent. Some studies that have analyzed the importance of attractiveness for men and women in male-typed, female-typed, and gender-neutral occupations, have found no evidence for the lack of fit hypothesis, and instead report that attractiveness increases suitability evaluations for men and for women irrespective of the gender-type of an occupation (Drogosz and Levy 1996; Maurer-Fazio and Lei 2015). According to Cash, Gillen and Burns (1977), HR consultants use gender as their primary frame when evaluating male and female applicants' suitability for gender-typed jobs based on CVs with photographs: being a male is an advantage both in applying for male-typed jobs and gender-neutral jobs, whereas women are more likely to be recommended for female-typed jobs (see Davison and Burke 2000 for a review of similar findings). Attractiveness, however, increases perceived suitability both for men in male-typed jobs and for women in female-typed jobs (Cash et al. 1977). On the contrary, Jawahar and Mattsson (2005) concluded that although gender is the strongest predictor of men getting hired for male-dominated jobs and of women getting hired for female-dominated jobs, attractiveness increases the likelihood of men getting hired for a female-dominated job and of women to be hired for a male-dominated job. Some studies even suggest that being attractive is an advantage for men and disadvantage for women when applying a gender-neutral job (Shahani-Denning et al. 2010).

Previous research suggest that gender categorization and gender-typing of occupations are crucial in the evaluation process of occupation-congruent appearance, however it seems clear that physical appearance plays a crucial role in perpetuating status-based differences beyond gender, as so many of the differences upon which people are categorized are embodied in individual's physical appearance (cf. Bourdieu 1984). Classics of sociology, including Elias ([1939] 1982), Veblen ([1899] 1994) and Bourdieu (1984) have stressed that status is not just signaled and engendered through appearance, but also *perceived* from appearance-based cues. Recent sociological research shows how already young children are able to classify other people into occupational status categories using dress and other attributes of physical appearance as cues (Vandebroeck 2020). Previous literature suggests occupational stereotypes consist of not just the dimension of gender-type, but an axis of prestige as well (Gottfredson 1981). Hence we can expect people to build their evaluations of occupation-congruent appearance on occupational prestige as well as gender-type, and to seek status cues from portrait photographs presented to them. It is also clear that occupational gender-type and prestige overlap and intersect (cf. Yavorsky 2019), and this is also highlighted in the literature on lack of fit discussed above (e.g., Heilman and Saruwatari 1979).

Moreover, it has been suggested that physical attractiveness, as a dimension of physical appearance, is an independent status characteristic (Webster and Driskell 1983; Ridgeway and Berger 1986). According to this perspective, attractive individuals are automatically considered 'better' and more capable than those perceived less attractive (see also Frevert and Walker 2014 for a review). However, as noted by Celia Ridgeway and Joseph Berger already in 1986: 'Physical attractiveness, for instance, operates as a status characteristic (Webster and Driskell 1983), but may not be clearly associated in shared beliefs with the occupation of valued status positions.' (Ridgeway and Berger 1986:607). What the authors seem to suggest here is that although 'attractiveness', which is assumed to be based on widely shared beauty standards, might be generally considered a status characteristics, it might not work according to such a straightforward logic as status beliefs theory otherwise suggests. In other words, in occupational contexts, physical attractiveness may not operate simply a status characteristics.

While on the basis of previous research we can argue that appearance is an important factor in forming social inequalities in occupational contexts, the concept and measure of attractiveness per se may not necessarily be the best to capture physical attributes relevant in these contexts. More specifically, it seems that what is expected appearance-wise from the representatives of a particular occupation is not only gender-specific but might also go beyond attractiveness. Thus, we develop and suggest a novel and simple measure that is able to capture gender-specific nuances of appearance in the form of culturally shared expectations for looking 'right' for a particular occupation. Next, we move on to our empirical case to study to what extent we can find shared cultural standards for occupational appearance. Second, we study how the relationship between attractiveness and occupation-congruent appearance for men and women varies according to the female dominance of an occupation. By introducing the novel measure of occupation-congruent appearance we seek to offer a complementary measure for researchers interested in physical appearance and inequality.

## **Data**

Finland offers an interesting case to study occupational appearance-related perceptions for several reason. Finland has a rather long tradition of female labor force participation and gender equality (for discussion, see e.g., Authors1). Yet at the same time, Finland is one of the countries with the highest rates of gender-segregation in Europe (Hardy et al. 2015). Finland is also well-



known from its high-quality population registers, which enables the collection of high-quality survey data.

The [anonymized] Study of the University of [anonymized] yielded a large-scale, multidimensional data set which comprises of photograph data and rating data. More specifically, the data includes several dimensions, which are linked together by photograph IDs. The dimensions include: a) background information on the people in the photographs, b) background information on the people who evaluated the photographs, c) evaluations of the photographs. The data was further elaborated by d) supplementary coding.

The data is notable for its national representativeness. In previous data collections, physical appearance -related traits have traditionally been measured as attractiveness, either by one perceiver (e.g., AddHealth) or very limited number of perceivers (e.g., Wisconsin Longitudinal Study) or convenience samples (e.g., Kuwabara and Thébaud 2017). As the evaluation of physical appearance also has do with the evaluator and their social characteristics and background (cf. e.g., Kuipers 2015), the random, nationally representative sampling of evaluators makes this data set unique.

Furthermore, the data set includes other nationally representative appearance-based evaluations beyond attractiveness, including perceptions of femininity and masculinity, which according to previous studies matter for appearance-based inequality (e.g., Heilman 2001; Paustian-Underdahl and Walker 2016; Kuwabara and Thébaud 2017), as well as a measurement of occupation-congruent appearance. In addition, the data set is complemented by supplementary photograph-based coding of other attributes related to physical appearance or the qualities of the photograph.

#### *Occupational photograph data*

In order to answer our research questions, we first need data that include images of a large number of people linked with information of their real occupations. For this purpose, we use data consisting of images of candidates in the Finnish municipal elections of 2017. In these elections, candidates are presented with facial portraits including information about their name, age and occupation, which makes these data suitable for our purposes. The number of municipal councils was 295, and candidates 33 618 (8999 were elected). The data do not represent the Finnish population but includes a relatively good variation with regards to different occupations, although according to Official Statistics of Finland (2017), the candidates are socio-economically more privileged than persons entitled to vote in Finland. Furthermore, the average age (49.5) of municipal candidates is close to the average age (50.3) of entitled voters in Finland, and the gender distribution is 40/60 for men. (OSF 2017). It also has to be noted that the level of population diversity is low in Finland: The share of non-EU-born population is only 5%, and the primary country of origin is the former Soviet Union (OSF 2021). The political representation in Finland is predominantly white, which is reflected in the photograph data. The clear advantages of the data are its size, geographical representativeness, and the rather standardized quality of the images. The images are publicly available.

The candidates' background information was obtained from the official candidate register (Ministry of Justice 2017). The register has information on more than 28 000 candidates and includes information on candidate's name, municipality/electoral district, party, election number, gender, age, and occupation (declared by candidates). Fictitious IDs were added to protect ensure the privacy of the candidates, and all other information apart from information on candidates gender, age, occupation and electoral district was deleted. Next, candidates who did

not have an occupation on the time of elections (e.g., students, pensioners, the unemployed) were removed from the data.

Meanwhile, official candidate photographs were gathered. Although all of the photographs ought in principle be properly archived and publicly available, as all print material in Finland (Act on Cultural Resources in Finland [1433] 2007), gathering the photographs proved laborious. After over 10 000 photographs had been gathered from different sources, including party offices and municipalities, the photograph collection was deemed sufficiently representative for the subsampling.

Next, a sample of six subsamples totaling 1500 images was randomly sampled from this mass of photographs. The sample design was 2 (gender) x 3 (female share of occupation based on Official Statistics of Finland; a) 0-39,9%, b) 40-59,9%, and c) 60-100% females of those working in occupation). The photographs were processed in GIMP to remove any identifying information, including the candidate's election number. The election numbers were covered up with the logo of the research institution, that is the [anonymized]. As the photographs were processed, images of insufficient quality were screened out and removed from the sample. These included photographs drawn from newspapers' digital archives, which when brought to the survey platform were deemed too pixelated by pilot survey respondents. This resulted in 1415 images, which were used in the survey. The final gender distribution of our photograph data (40/60 for men) corresponds to the distribution in the original population.

#### *Evaluations survey data*

For the evaluations survey, a random sample of 26,500 18-64-year-old Finnish-speaking Finns were drawn from the Finnish population register. During fall 2020, these potential respondents were sent one postal invitation and one postal reminder to participate in an online survey. In the invitations, each sample of respondents was given a different survey URL. In total, the survey yielded 7920 responses, amounting to a 30 % response rate. In terms of representativeness, the data is slightly skewed. More women (56%) than men (44%) responded to the survey. Higher-educated Finns responded slightly more eagerly than Finns with less education. Finns from different regions are represented well, and the mean age of respondents was 43,6 years. (for more information see, Authors 3).

In the survey, each respondent evaluated a random sample of approximately 50 photographs from the data of 1415 images. A special randomized picture rating tool for surveys (Authors 2) was developed for this purpose. The software presented respondents random photos from the pool of images, however favoring images that had been rated less times. The software compared the candidate's electoral district with the survey respondent's electoral district and ruled out pictures that represented people from respondent's own electoral district. Thus, we were able to minimize recognition. In order to reduce comparison of appearance-related evaluations between photos presented, a neutral screen with a simple black university logo on a white background appeared on the screen between the images. The attribute on which respondents evaluated their random sample of photographs varied between the five samples. The five samples were formulated by the researchers by dividing the original sample (26,500 evaluators) into five subsamples. Sample 1 evaluated occupation-congruent appearance, Sample 2 attractiveness, Sample 3 masculinity, Sample 4 femininity, and Sample 5 was a control group for occupation-congruent appearance. As expected, respondents recognized the people in some of the images more often than in other images. Images for which over half of respondents chose the option 'I recognize the person in the photograph' rather than rated the image on the given attribute may be considered pictures of well-known individuals, and are excluded from the analysis (four images).

## Variables

### *Evaluating aspects of appearance from images*

*Occupation-congruent appearance.* Respondents in Sample 1 were shown the 50 randomly produced images one by one and asked: ‘To what extent does this person respond to your image of someone working in the occupation [insert actual occupation of person in the image]? Please respond according to your first impression. In case you recognize the person in the picture, choose the option “I recognize the person in the photograph”’. The response options were: 5=Perfectly responds to my image, 4=Responds well to my image, 3=Somewhat responds to my image, 2=Does not respond to my image well, 1=Does not respond to my image at all. In terms of occupation-congruent appearance, each image was rated approximately 80 times. It has to be noted that as we were testing a new measure, we set the contingent of ratings at this level to receive a feasible amount of ratings per image. Thus, this procedure differs from the ones used in some previous studies where ratings are forced to correlate by inviting additional coders until a certain level of inter-coder reliability is reached (see e.g., Kuwabara and Thébaud 2017).

*Attractiveness.* At the same time, respondents in Sample 2 were shown 50 randomly produced images one by one and asked ‘In your opinion, how attractive does this person look, as compared to others of the same age and gender?’ Again, respondents were instructed to follow their first impression, and given the option ‘I recognize the person in the photograph’. The other response options were 1=very attractive, 2=more attractive than the average, 3=average, 4=below average, 5=well below average (e.g., Griffin and Langois 2006; Bono et al. 2017; Tu, Gilbert and Bono 2021).

*Masculinity.* Respondents in Sample 3 evaluated their random samples of 50 photographs on perceived masculinity: ‘To what extent do you think this person looks masculine, as compared to others of the same age and gender?’ As for the previous samples, respondents were instructed to follow their first impressions and to not evaluate people they recognized. The response scale was a Likert-scale ranging from 1=not masculine at all, to 5=very masculine (e.g., Hoss et al. 2005). Masculinity was defined for respondents by using the definition by official ‘Dictionary of Contemporary Finnish (Kielitoimiston sanakirja), a dictionary of standard Finnish compiled by the Institute for the Languages of Finland: ‘masculinity refers to manly, mannish’. The respondents were also reminded that both men and women can be perceived masculine. As gender expression is not binary, it is worth assessing masculinity and femininity separately (cf. Lindqvist, Sendén, and Renström 2020).

*Femininity.* Respondents in Sample 4 evaluated their random samples of photographs on perceived femininity, which was measured akin to perceived masculinity. Femininity was defined, again referring to a dictionary of standard Finnish compiled in the Institute for the Languages of Finland, as: ‘womanly, effeminate’.

On the scales of attractiveness, femininity and masculinity each image received approximately 40 ratings, as the contingent of ratings for all the measures were set to 40. The contingent of ratings was set at this level as the scales of attractiveness, masculinity and femininity have been validated by previous research.

### *Women’s share in occupation*

The share of women in occupations was calculated as number of women in occupations (classified using ISCO-08) divided by the total number of Finns in the occupations, using data from 2014 from Official Statistics of Finland

(2021b). The ISCO codes of occupations of the people in the photographs were then matched with the information on the share of women in the occupations using the VLOOKUP command in MS Excel.

### *Controls*

In our analysis we control for age and smiling of the person in the photographs.

*Age.* Age of the person in the photograph was used as continuous variable. Information is based on the register information by the Ministry of Justice.

*Smiling.* According to previous research smile matters for photo-based evaluations of physical appearance, hence two individuals separately coded smile on a 3-point scale: 1=not smiling: a neutral or serious face; 2=smiling, but mouth closed; 3=smiling so that teeth are visible.

### **Analysis procedure**

Table 1: The descriptive statistics for the applied variables

The analysis began with a correlation analysis between and within the different appearance attributes. First, we examined how image-specific ratings correlated between respondents, i.e., whether there is reliability between measurements, by using average percentage agreement and intra-class correlations. Then, we used Pearson correlation coefficients to find out how different attributes relate to each other and whether different attributes can eventually detect different dimensions of appearance. All calculations were performed using Stata 16, and the user-written package `-kappaetc-` was used for inter-rater agreement tests (Klein 2018).

The second stage of analysis focused on the image-level associations by modelling occupation-congruent appearance according to other attributes and contextual factors. We began this analysis without gender separation in order to find the variables that are generally associated with the occupation-congruent appearance variable. This analysis laid the groundwork for the next step, where we conducted regression models for males and females separately. Here, we first estimated the direct associations between different independent variables and occupation-congruent appearance while age was standardized. Next, we conducted a stepwise regression in which we started with a model including attractiveness before the confounding variables were introduced into the model step-by-step. To find potential indirect effects of confounding variables, we compared the models using the Sobel delta method with 500 times replicated bootstrap standard errors (Bollen and Stine 1990). Then, we analyzed how women's share in occupation moderated the relationship between attractiveness and occupation-congruent appearance by introducing the interaction term *attractiveness x women's share* and ran the models with all other variables. The analyses were performed separately for males and females.

In the final stage of analysis, we considered how the characteristics of the respondent may affect the ratings of occupation-congruent appearance. More specifically, we modeled the relationship of respondent-level factors to ratings of occupation-congruent appearance while considering the effect of image-level factors, i.e. other attributes, women's share in occupation and controls. The data were treated as panel data: respondents were nested within each image. The analyses were performed using multilevel random-effect (Generalized Linear Square [GLS]) regression models to account for the correlations among each individual respondent within the same image. The

analyses were performed in the same order as the image-specific models conducted in the previous stage.

Throughout the analyses, we standardized each attribute variable for the regression models by rescaling them to have a mean of zero and a standard deviation of one according to gender. Accordingly, the value of each case on the standardized variable indicates its difference from the mean of the original variable in the number of standard deviations (of the original variable) by gender. We report unstandardized regression coefficients ( $b$ ) along with the standard errors and statistical significances ( $p$ -value) estimated from the regression models. Moreover, the interaction effects were elaborated into more easily interpretable forms with graphs. The regression analyses were performed with Stata 16 and the user-written *coefplot* package was utilized to illustrate the results as graphs (Jann 2014). We also tested the confounding effects by using the *kbb* command (Kohler and Karlson 2019).

## Results

In order to study the existence of shared occupational appearance standards, and to answer our first research question, we first analyzed intra-class correlations (ICC) for images. Table 2 shows average percentages and intra-class correlations for male and female images. Based on the results, the average ratings of the respondents were close to each other depending on the attribute and gender of the evaluated image. In terms of occupation-congruent appearance, we found that about 30% of respondents evaluated images in the same way. This proportion appeared to be slightly lower than for the other attributes. However, after considering the random variability of the images, the ICC of occupation-congruent appearance was 0.24 and 0.22 for males and females, respectively.

The ICCs of occupation-congruent appearance were not high, but they can be considered fair (Landis and Koch 1977; Klein 2018). Moreover, they correspond to the estimates of the other attributes. The ICCs were generally higher or the same than the estimates of femininity and masculinity but lower than the estimates of attractiveness. The results also show that the gender of the image being evaluated did not matter for evaluations of occupation-congruent appearance, in contrast to the other attributes.

Table 2 here

Next, and to answer our second research question, we analyzed correlations between the different appearance attributes. Based on the results, shown in Table 3, occupation-congruent appearance was not strongly related to femininity, masculinity nor attractiveness of appearance among males. For women, too, the correlations between occupation-congruent appearance and the other attributes of appearance were weak. The results showed that masculinity and femininity correlated strongly and negatively. We also found that femininity positively correlated with attractiveness among women. However, we did not find a strong correlation between masculinity and attractiveness among men.

Table 3 here

Before moving on to the regression analysis, we dealt with the high negative correlation between the masculinity and the femininity variables. We reversed the masculinity variable and compounded it with the femininity variable. The values of the new variable varied on the 1-5 scale on which 1 indicated high masculinity and 5 high femininity.

We began a more detailed analysis of the relationships between the variables by assessing the main effects without gender separation. The results are shown in Table 5. We found that gender is a key predictor of occupation-congruent appearance: this means that women are more often than men seen to represent a particular occupation by their appearance. We found that age is negatively associated with occupation-congruent appearance. This means that younger people are more likely to be seen as representing a particular occupation based on their appearance. In addition, we found that attractiveness is related to occupation-congruent appearance, indicating that more attractive persons are more likely to be seen as representing a particular occupation based on their appearance.

Table 4 here

To answer the third research question, a regression analysis was conducted separately for male and female images. Table 5 presents the results. The simple regression models are shown in M0. The results indicated that attractiveness and women's share in occupation was related to occupation-congruent appearance among both genders. Moreover, feminine appearance is related to how women are evaluated to look suitable for an occupation.

The first adjusted models (M1) indicated that attractiveness had a positive relationship with occupation-congruent appearance among both males ( $B = 0.18$ ,  $p < .001$ ) and females ( $B = 0.14$ ,  $p < .001$ ). The second (M2) and third models (M3) indicated that femininity was negatively related to occupation-congruent appearance among males ( $B = -.08$ ,  $p < .05$ ), and respectively, masculinity was negatively related to occupation-congruent appearance among females ( $B = -.25$ ;  $p < .001$ ). The fourth models (M4) show that women's share in occupation was negatively linked to men's occupation-congruent appearance ( $B = .01$ ,  $p < .001$ ) and, correspondingly, positively linked to women's occupation-congruent appearance ( $B = .02$ ,  $p < .001$ ).

The first four models indicated that the relationship between attractiveness and occupation-congruent appearance strengthened as the other attributes and women's share in occupation were standardized. We tested the potential indirect effects by estimating the difference between models 1 and 4 using the Sobel test with bootstrap estimated standard errors. The Sobel test results indicated that the relationship between attractiveness and occupation-congruent appearance was not indirect through confounding variables among males ( $B = -.02$ ,  $p = 0.18$ ) nor females ( $B = -.05$ ,  $p = 0.23$ ).

Next, we examined to what extent occupations' women share moderates the relationship between attractiveness and occupation-congruent appearance. The fifth models (M5) in Table 6 shows the results of the interaction analysis. We found a significant interaction between women's share and attractiveness among males ( $B = .01$ ,  $p < .001$ ), but we could not find corresponding

associations among women ( $B=-.002$ ,  $p=.159$ ). Based on the result, the attractiveness of men was related to how their appearance was assessed as suitable for the occupation regardless of the prevailing gender distribution of the occupation. We illustrate the relationship in Figure 1. The figure shows how, in the case of females, the female-dominance of an occupation increases occupation-congruent appearance despite ratings of attractiveness. In other words, for women attractiveness increases occupation-congruent appearance in general despite the share of women in an occupation. Instead, attractiveness can increase men's occupation-congruent appearance, even if they work in a very female-dominated occupation.

Table 5 here

Figure 1 here

Finally, we conducted multilevel random effect models to understand how respondent-level factors were associated with ratings of occupation-congruent appearance. The results presented in Table 6 show that the main factor at the respondent level was women's share in occupation. The first column of table describes the total effects without stratifications. According to the results of total effects, respondents working in female-oriented occupations gave higher ratings of occupation congruent appearance ( $B=0.02$ ,  $p<0.001$ ) as compared those working in more male dominated occupations. When we continued with subgroup models in the next columns, we found that the effect of women's share in respondents' occupation on ratings was significant in terms of images of males ( $B=0.03$ ,  $p<0.01$ ) and those working in female-dominated occupations ( $B= 0.03$ ,  $p<0.01$ ). The final model suggested that the respondents' occupation was significant ( $B= 0.05$ ,  $p<0.01$ ) only when the person being rated was a man working in a female-dominated occupation.

The image-level results in Table 6 confirmed our previous findings when respondent-level factors were considered. First, females were most often rated to be suitable for the occupation. Second, the share of women in the occupation had a significant impact on the ratings of images of both males and females. Finally, the result also showed that for males, attractiveness is related to occupation-congruent appearance when men are working in female-dominated occupations. In general, the directions of the associations corresponded to the results we obtained in previous models with aggregate values.

Table 1. The descriptive statistics for the applied variables.

	Male					Female				
	N	Mean	St.dev	Min	Max	N	Mean	St.dev	Min	Max
Occupation-congruence	824	3.28	0.58	1.32	4.53	587	3.45	0.53	1.73	4.46
Femininity	824	1.84	0.40	1.06	3.41	587	3.35	0.47	2.16	4.61
Masculinity	824	3.09	0.40	1.76	4.36	587	2.10	0.37	1.24	3.35
Attractiveness	824	2.76	0.45	1.44	4.02	586	3.02	0.51	1.32	4.35
Women's share in occupation	813	36.69	27.13	1.12	93.82	580	67.02	23.71	3.69	99.83
Age	824	46.06	10.63	18	63	587	45.06	10.31	20	63
Smiling	824	1.81	0.74	1	3	587	2.40	0.67	1	3

Table 2: Overall inter-figure agreements according to the appearance attributes

	Male			Female		
	<u>Agreement</u>	<u>ICC</u>	95% CI	<u>Agreement</u>	<u>ICC</u>	95% CI
	%	Coef		%	Coef	
Occupation-congruence	28.9	0.24	(0.22-0.26)	30.1	0.22	(0.20-0.24)
Attractiveness	42.0	0.28	(0.26-0.30)	42.9	0.35	(0.32-0.37)
Femininity	38.4	0.14	(0.13-0.16)	33.5	0.22	(0.19-0.24)
Masculinity	33.3	0.15	(0.14-0.17)	30.9	0.10	(0.09-0.12)
Number of rated subjects		824			587	



Table 3: Correlations between different appearance attributes by gender

	Male				Female			
	V1	V2	V3	V4	V1	V2	V3	V4
V1 Occupation-congruence	1.00				1.00			
V2 Femininity	0.01	1.00			0.16	1.00		
V3 Masculinity	0.05	<b>-0.67</b>	1.00		-0.24	<b>-0.72</b>	1.00	
V4 Attractiveness	0.19	0.29	0.18	1.00	0.20	<b>0.82</b>	<b>-0.60</b>	1.00

Table 4: Predicting occupation-congruent appearance according to gender, attractiveness, women share in occupation and other confounding variables.

VARIABLES	M0	M1
Female	0.25*** (0.06)	0.37*** (0.12)
Attractiveness	0.20*** (0.03)	0.17*** (0.03)
Masculinity-Femininity	0.14*** (0.03)	-0.09 (0.06)
Women's share in occupation	0.00 (0.00)	-0.00 (0.00)
Constant	-0.42*** (0.08)	-0.08 (0.18)
Observations	1.411	1.392
R-squared	0.02	0.06

M0= Direct associations; M1= Adjusted associations

The models adjusted with "smiling" and age

Standard errors in parentheses

\*\*\* p<0.001. \*\* p<0.01. \* p<0.05

Table 5: Predicting occupation-congruent appearance among males and females according to attractiveness, women's share in occupation and other confounding variables.

VARIABLES	<u>Male</u>					<u>Female</u>				
	M0	M1	M2	M3	M4	M0	M1	M2	M3	M4
Attractiveness	0.18*** (0.04)	0.18*** (0.04)	0.18*** (0.04)	0.19*** (0.03)	-0.03 (0.06)	0.11** (0.04)	0.11* (0.04)	0.07 (0.06)	0.08 (0.06)	0.22* (0.11)
Women's share in occupation				-0.01*** (0.00)	-0.01*** (0.00)	0.02*** (0.00)			0.02*** (0.00)	0.02*** (0.00)
Attractiveness * Women's share					0.01*** (0.00)					-0.00 (0.00)
Masculinity-Femininity	-0.08 (0.04)		-0.06 (0.04)	-0.06 (0.04)	-0.06 (0.03)	0.12* (0.04)		0.06 (0.07)	0.08 (0.06)	0.07 (0.06) (0.00)
Constant		0.16 (0.16)	0.30 (0.17)	0.72*** (0.17)	0.70*** (0.17)		0.59** (0.20)	0.62** (0.20)	-0.81*** (0.21)	-0.81*** (0.21)
Observations		824	824	813	813		586	586	580	580
R-squared (adj.)		0.04	0.04	0.14	0.16		0.07	0.07	0.26	0.26

Standard errors in parentheses

\*\*\* p<0.001. \*\* p<0.01. \* p<0.05

The models are adjusted with age and smiling

Table 6. Random effect GLS regression predicting occupation-congruent appearance evaluation according to respondents' gender, occupation and age.

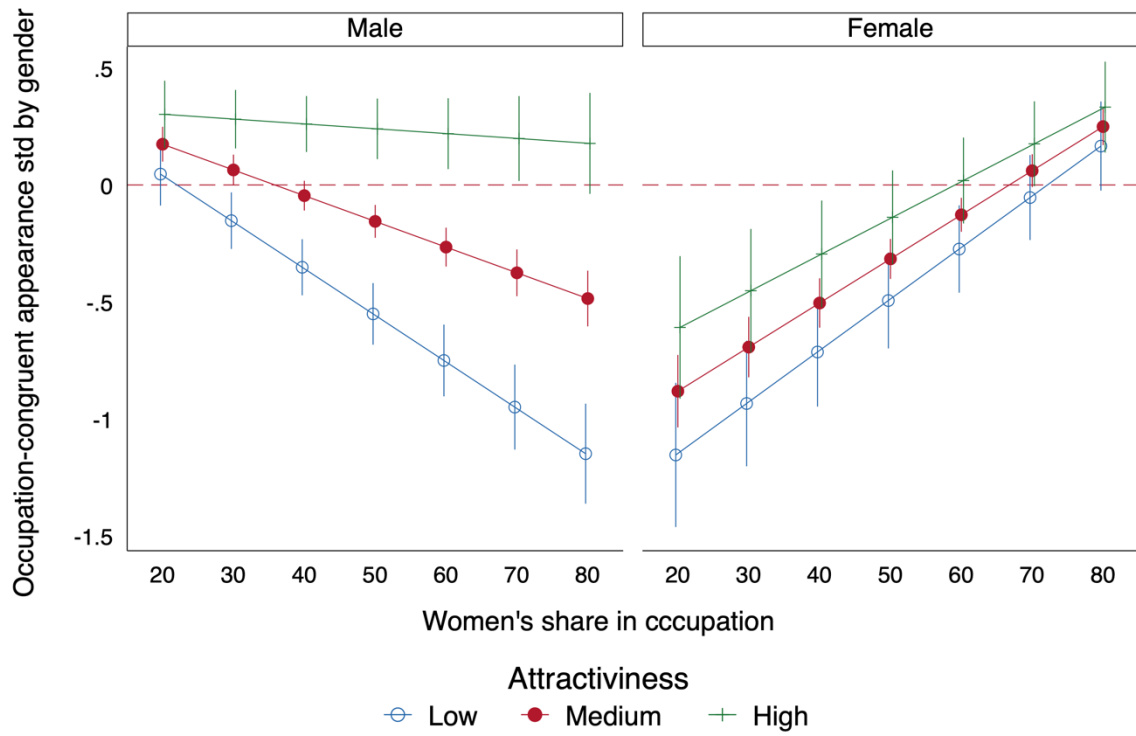
VARIABLES	Total	<u>Image: gender</u>		<u>Image: women's share</u>			<u>Image: gender x women's share</u>					
		Male	Female	0-39.9%	40-59.9%	60-99.9%	Male 0-39.9%	Female 0-39.9%	Male 40-59.9%	Female 40-59.9%	Male 60-99.9%	Female 60-99.9%
<i>Respondent level:</i>												
Women	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.02)	0.02 (0.01)	0.02 (0.01)	-0.00 (0.03)	-0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)	0.02 (0.01)
Women's share in occupation (ref= 0-39.9%)												
40-59.9%	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.01)	0.01 (0.02)	0.01 (0.01)	0.00 (0.01)	-0.01 (0.04)	0.01 (0.03)	0.02 (0.03)	0.02 (0.02)	0.01 (0.02)
60-99.9%	0.02*** (0.01)	0.03** (0.01)	0.02 (0.01)	0.02 (0.01)	0.01 (0.02)	0.03** (0.01)	0.02 (0.01)	0.01 (0.03)	0.00 (0.02)	0.02 (0.03)	0.05** (0.02)	0.02 (0.01)
Age	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)
<i>Image level:</i>												
Women's share in occupation (ref= 0-39.9%)												
40-59.9%	-0.02 (0.04)	-0.08 (0.05)	0.51*** (0.07)									
60-99.9%	-0.01 (0.04)	-0.38*** (0.05)	0.72*** (0.05)									
Female	0.17** (0.06)			-0.37*** (0.10)	-0.17 (0.13)	0.58*** (0.09)						
Attractiveness	0.10*** (0.02)	0.11*** (0.02)	0.03 (0.03)	0.06* (0.03)	0.14*** (0.04)	0.12*** (0.02)	0.03 (0.03)	0.06 (0.11)	0.18*** (0.05)	0.10 (0.07)	0.21*** (0.04)	0.01 (0.03)
Masculinity-Femininity	-0.04 (0.03)	-0.03 (0.02)	0.03 (0.03)	-0.11* (0.05)	0.08 (0.06)	-0.06 (0.05)	-0.08** (0.03)	-0.04 (0.12)	0.08 (0.04)	0.03 (0.07)	-0.01 (0.05)	0.04 (0.03)
Constant	3.44*** (0.07)	3.56*** (0.10)	2.98*** (0.12)	3.59*** (0.11)	3.07*** (0.15)	3.24*** (0.11)	3.64*** (0.12)	3.27*** (0.35)	2.90*** (0.22)	3.08*** (0.24)	3.20*** (0.23)	3.81*** (0.12)
Observations	151,798	88,511	63,287	60,238	25,521	66,039	51,207	9,031	14,845	10,676	22,459	43,580
Number of images	1,411	824	587	561	238	612	477	84	139	99	208	404
Observations / images (avg.)	108	107	108	107	107	108	107	108	108	108	108	108

Robust standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Models adjusted with age and smiling (image-level)

Figure 1: The adjusted predictions of occupation-congruent appearance according to attractiveness in different occupations divided by women's share.



## Discussion and Conclusion

In this paper, we introduced the novel measure of ‘occupation-congruent appearance’, that is looking ‘right’ for a particular occupation, and tested its possibilities to capture culturally shared occupational appearance standards. Previous research on the importance of attractiveness has yielded inconsistent results in terms of gender and gender-type of job, and therefore there seemed to be a measurement-developmental gap. Although sociological research on physical appearance and social inequalities has increased rapidly during the last decade, quantitative sociologists have been rather reluctant to develop measures to study the topic. Our objective was to formulate a simple measure that could be used as a complementary measure, alongside attractiveness, in the field of studies of physical appearance and gendered labor market inequalities. Previous theoretical literature and empirical research has suggested that physical cues including perceived gender, attractiveness, femininity and masculinity are important in evaluating occupational congruency or incongruency (i.e. ‘lack of fit’). We argue ‘occupation-congruent physical appearance’ can capture occupational appearance standards that cannot be studied by using measures of attractiveness, masculinity and femininity only.

Our empirical analysis shows, first, that there are somewhat shared cultural standards for occupational physical appearance. In other words, despite the fact that our occupational sample included a heterogeneous collection of common and less-common occupations, Finns evaluate the occupational ‘fit’ of the persons in the images rather similarly. It is probable that the consensus would be even higher if we would have selected occupations on the basis of how common they are. Nevertheless, results from our empirical analyses suggests that the prevalence of ‘occupation-congruent appearance’ is nearly at the same level as the prevalence of shared cultural standards of attractiveness and greater than femininity and masculinity. Moreover, it has to be noted that our research setting, which included a wide sample of images evaluated by raters randomly selected from population register, inevitably leads to a lower level of agreement compared to more traditional research settings, where the sample of images is very limited and evaluators a homogeneous group of people (i.e. university students). Second, our analysis reveals not only the existence of occupational appearance standards, but also the independence of occupation-congruent appearance from other typically measured and analyzed aspects of physical appearance (attractiveness, masculinity and femininity). Thus, it seems that ‘occupation-congruent appearance’ captures the kind of elements of appearance that are not reducible to attractiveness, femininity, and masculinity.

Third, we find that gender of the person in the image per se is the most significant factor in determining occupation-congruent appearance. Fourth, as expected, we find that attractiveness plays a very different role for men and for women, and interacts with the female-dominance of an occupation. However, we did not find evidence to support the notion that attractiveness would hamper women’s occupational appearance congruency in male-dominated occupations. Instead, our analysis suggests that attractiveness increases occupational appearance congruency for women regardless of the female/male-dominance of their occupation. For men, the effect of attractiveness on occupation-congruent physical appearance is, however, dependent on the societal-level gender distribution of an occupation: attractiveness seems to improve occupation-congruent appearance for men particularly in female-dominated occupations. For both men and women, the relationship is direct and not moderated by perceived femininity/masculinity.

Taken together, these findings contribute to our theoretical understanding of the aspects of physical appearance that may contribute to gender inequality in occupational contexts, and, more

broadly, to our understating of cultural occupational classification systems (e.g., Boltanski and Thévenot 1983; Ridgeway 2014; Vandebroek 2020). Our empirical analyses are largely consistent with the idea that gender segregation in occupations combined with gendered expectations of ‘proper’ physical appearance form the basis of occupational appearance standards at a societal level. First, our findings do not support the idea of attractiveness as general status characteristics (Webster and Driskell 1983; cf. Ridgeway and Berger 1986; Frevert and Walker 2014). Instead, it seems that attractiveness may be better viewed as gender-specific asset generally increasing women’s possibilities to be viewed as ‘good’ representatives of their occupations. Vice versa, the lack of attractiveness generally decreases women’s occupational fit. This is certainly old news for feminists, many of whom have for a long time claimed that the requirement to look attractive concerns women regardless of their occupation (e.g., Wolf [1991] 2013). For men, this asset seems to be context-dependent when approached from the point of view of occupation-appearance congruency. However, it might be that attractiveness as a part of occupation-congruent appearance is becoming more salient for men as well and that the change has only started from the most ‘obvious’ (i.e. female-dominated) occupational sectors where appearance-related requirements have most traditionally and for a long time been attached with occupational fit. Second, our study makes an important contribution to the literature on ‘lack of fit’ (e.g., Heilman 1983; Heilman 2001; Kuwabara and Thébaud 2017) by suggesting that in empirical research, lack of fit or having fit might be approached with a more direct operationalization as well; by asking people to evaluate to what extent someone corresponds their idea of a representative of certain occupation.

Our results are certainly not without limitations. First, with our current data we are not able to analyze the extent to which occupation-congruent appearance actually produces inequalities. A second limitation is related to our measure of ‘occupation-congruent appearance’. Our data do not allow us to comprehensively analyse what comprises ‘occupation-congruent appearance’. What kind of make-up and grooming styles or facial expressions (other than smiling) contribute to ‘occupation-congruent appearance’ for men and women in different occupations? This means that for now, we are putting the contents of occupational aesthetics into a ‘black box’ (cf. Mears 2014). Third, our data are rather homogenous in terms of race and ethnicity: there are less than 1 per cent racialized people in our photograph data. Thus, we are unable to analyze the interaction effects of gender, occupation and race/ethnicity. Fourth, our analysis does not fully take into account the possible appearance ‘tastes’ related to evaluators’ gender, occupation and social class. Nevertheless, our preliminary analyses according to respondents’ own occupational background suggest that there are some occupational field specific rules of looking ‘right’. These are all limitations that need to be addressed in future research.

Taking all together, our results are primary. Despite this and the limitations related to our study, our research shows that cultural standards of looking ‘right’ for a certain occupation do exist, and they are not just standards of attractiveness or beauty. Occupation-congruent appearance is, however, gendered and its social and economic outcomes are yet to be studied. Formulating new measures, such as the one presented in this paper, is a critical step towards understanding how appearance-related gendered outcomes are produced in occupational contexts.

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