

REVIEW ARTICLE

Tracing Pathways From Social Ecology to the Mind: A Cultural Snapshots Approach to Understanding Gender Stereotype Socialization

Sarah Ariel Lamer  | Gillian Michelle Preston  | Darla Bonagura  | Megan Ruskey 

Department of Psychology, The University of Tennessee, Knoxville, Tennessee, USA

Correspondence: Sarah Ariel Lamer (slamer@utk.edu)

Received: 23 April 2025 | **Revised:** 17 June 2025 | **Accepted:** 23 June 2025

Keywords: culture | gender | socialization | stereotyping and prejudice

ABSTRACT

The social environments people encounter are rich with covarying cues and patterns involving gender. Nevertheless, prevalent methodologies for studying how these public representations of gender shape beliefs are lacking in their ability to make causal claims. Accordingly, we present the Cultural Snapshots approach to more accurately assess how subtle cues in cultural environments impact gender stereotype socialization. Cultural Snapshots first identifies and quantifies cultural patterns in ecologically valid, shared environments (i.e., *social ecologies*). Next, snapshots of these patterns are selected and used to create experimental conditions and test causal hypotheses. In using stimuli sampled from social ecologies, researchers maintain naturally co-occurring cues specific to the ecology from which the snapshots are taken. This approach can allow researchers to causally test the effect of contextually relevant cultural patterns on social cognition. In this article, we provide a step-by-step guide on designing experimental research using Cultural Snapshots and discuss specific considerations when applying this approach to studying gender stereotype socialization.

1 | Introduction

The U.S. cultural landscape surrounding traditional gender role expectations and norms has changed significantly over the last 60 years (Eagly et al. 2020). For example, more women now earn bachelor's degrees than men, and this pattern emerges across various racial and ethnic groups (Hurst 2024). Nonetheless, many traditional gender stereotypes remain prevalent. For instance, girls as young as six are less likely to think that their own gender group is “really, really smart” compared to boys (Bian et al. 2017), a stereotype that has been shown to become stronger throughout childhood and reach levels comparable to those of adults by 13 (Zhao et al. 2022). Moreover, meta-analytic evidence from 60 years of U.S. opinion polls indicates that traditional gender stereotypes about communality and agency have remained stable and/or strengthened (Eagly et al. 2020). People tend to strongly believe that women are more communal

than men (e.g., affectionate, compassionate) and that men are more agentic than women (e.g., courageous, decisive). We are interested in how so many people, distributed across an entire population, come to hold such *similar* beliefs about gender. One potential source is how information about women and men is presented in the shared environments that people from a population frequently encounter (what we will refer to as *social ecologies*).

People are highly attentive to prescriptive and proscriptive messages about women's and men's behavior. Even children frequently search for cues about gender that can teach them how to act (Martin and Ruble 2004). Children as young as four attend to others' gender when predicting who will become friends (Shutts et al. 2013), pay more attention to and have better memory for attributes of their own gender group (Solbes-Canales et al. 2020), and “correctly” categorize toys and traits by

gender stereotypicality (Alto and Mandalaywala 2023; Freeman 2007). Adults extensively use their beliefs about gender, such as when interpreting ambiguous emotional expressions (Plant et al. 2004), perceiving a group's threat (Alt et al. 2024), and categorizing others by race (Carpinella et al. 2015). It is common and even considered acceptable to separate and distinguish people by gender (Smiler and Gelman 2008), so much so that even infants are dressed in gender-typed ways to ease identification (Shakin et al. 1985). While the cues linked to gender become much more nuanced than hair bows and clothing colors across development, the patterns people encounter in their social ecologies involving gender remain plentiful. Given that people feel emboldened by gender essentialist beliefs to justify different treatment and representations of women and men (Lee et al. 2020), patterns involving gender are likely numerous. Gender stereotypes have been a persistent feature of human cultures, but their specific structure has shifted throughout history. We propose that both stagnation and change in gender stereotypes can be traced to patterns in the social ecologies people inhabit. These patterns may be relatively subtle, alluding to the usefulness of a method for identifying them.

2 | A Few Prevalent Theories of (Gender) Socialization

Many theories in social, developmental, and communication sciences exist to explain how people learn from their social ecologies. We review a few of these theories as applied to gender stereotype socialization.

2.1 | Cultivation Theory

Cultivation Theory (Gerbner 1998) suggests that people gradually learn information from the messages they encounter in media. Cultivation Theory assumes that media reflect a distorted reality and frequent exposure to media has the potential to shift people's beliefs to align with what they are viewing. For example, past work has shown that consuming television, particularly soap operas, correlates with stronger rape myth endorsement (i.e., beliefs that rape accusations are fabricated by the accuser; Kahlor and Eastin 2011). From the perspective of Cultivation Theory, there is a causal link between exposure to media in which rape myths are prevalent and perceivers endorsing these beliefs in the real world. Yet this theory has often been tested with correlational studies, leaving open questions about the causal relationship between media and cognition.

2.2 | Social Role Theory

Whereas Cultivation Theory highlights gender stereotype learning via distorted media representations, Social Role Theory (Eagly and Steffen 1984) posits that individuals learn gender stereotypes by observing career distributions of women and men. Indeed, women are overrepresented in roles emphasizing care and support, such as childcare and human resources,

whereas men are overrepresented in roles emphasizing decisiveness and confidence, such as leadership and management (U.S. Bureau of Labor Statistics 2025). By observing women and men engage in the behaviors these careers require, people learn and/or strengthen their traditional gender role beliefs. Evidence for this theory is widespread. For example, Koenig and Eagly (2014) demonstrated that simply presenting information about what future gender distributions will look like across careers predicted people's stereotypes about these groups. Yet this theory has often been tested with manipulations that verbally *describe* a pattern rather than allow people to extract the pattern from their environment, leaving open questions about how people update their stereotypes from observable patterns of workforce distributions in their social ecologies.

2.3 | Developmental Intergroup Theory

Developmental Intergroup Theory (Bigler and Liben 2007) also proposes mechanisms through which social ecologies can socialize group-based stereotypes, focusing on children. Bigler and Liben proposed four processes that impact gender salience, therefore making it a readily available way to categorize and stereotype others: the perceptual discriminability of gender groups (e.g., clothing color, hair style), proportional group size (i.e., when a group has fewer members, they are more likely to become the target of prejudice), explicit use of group labels (e.g., "girls and boys" to greet students, dividing toys into "girls' toys" and "boys' toys"), and general implicit social categorization (i.e., children are not prompted with information to categorize others, but instead construct meaning by observing similarities and differences). Developmental Intergroup Theory explores the various ways social ecology can influence children's minds, leading to gender stereotype endorsement. For example, Hilliard and Liben (2010) demonstrated that when teachers used explicit gender labeling and gender group categorizations, children in these classrooms (vs. control classrooms) showed increased gender stereotyping and less interest in playing with gender-outgroup classmates. Although this study employed a clever manipulation in an ecologically valid environment, it did not fully establish the connection between social ecology and the mind. Doing so would require quantifying the prevalence of a pattern and then manipulating it using the cues as they naturally occur in children's social ecologies.

3 | Current Approaches and Their Limitations

3.1 | Content Analysis

Researchers typically employ one of a few approaches to assess hypotheses about gender stereotype socialization. One approach is to measure a pattern that scientists hypothesize transmits gender stereotypes. For example, Gálvez et al. (2019) investigated the frequency with which words associated with brilliance (e.g., ingenious, clever) co-occurred with different gender pronouns in movie scripts from the past 50 years. They found brilliance-related words were significantly more likely to appear alongside pronouns referring to men and boys (he/him/his) than pronouns referring to women and girls (she/her/hers). The

assumption is that this pattern shapes beliefs, conveying that men and boys are more likely to possess inherent genius than women and girls. However, a causal test is essential; the audience may not notice or encode this linguistic pattern in the context of all the other available information in a movie scene. Other patterns may draw attention when watching a film, superseding an influence of this one.

Content analyses have revealed many thought-provoking patterns in social ecologies, such as gender imbalances in being interrupted (Feldman and Gill 2019), the average age cast in commercials (Ganahl et al. 2003), and acts of physical aggression (Luther and Legg 2010). However, a content analysis alone cannot determine impact. For example, in our work, we identified a pattern in which men appeared higher on the pages of magazines than women. We systematically sampled about 600 images from 12 of the most popular magazines at the time (Lamer and Weisbuch 2019). Women were placed slightly lower than men. We hypothesized that this pattern *could* be meaningful. People associate higher vertical locations with concepts such as power and dominance (Schubert 2005). Therefore, seeing a pattern in which men systematically appear higher than women could cause people to think that men are more powerful and dominant than women, in line with gender stereotypes (Bareket and Fiske 2023). Yet, where something appears in space is a subtle cue that could be overlooked amidst the cacophony of cues present when people view a visual display of information. Even on a magazine page, people perceive a wealth of information: emotion, body-posture, gender-stereotypicality of the person in the image, and whether the page is an advertisement or a story, among other cues. While a pattern of gendered spatial elevation is intriguing, the content analysis alone cannot reveal whether the pattern socializes beliefs.

3.2 | Experimental Tests of Lab-Generated Stimuli

Another approach to examining how people learn gender stereotypes is to test how they respond to lab-generated stimuli that reflect a pattern *thought* to exist in the world. For example, researchers could test the influence of seeing men located higher than women by placing images of men high on a screen and images of women low on a screen or vice versa. This approach offers a significant degree of experimental control and internal validity by granting researchers the ability to eliminate additional visual noise and control for covarying cues. For example, all images could be limited to smiling headshots of middle-aged, White targets on a gray background. Studies like this, which optimize internal validity, are especially meaningful in revealing what *can* happen in human minds, but are limited in their capacity to explain what *does* happen in human minds (Mook 1983). When a complex pattern from one's social ecology is reduced to a single perceptual cue without any naturally co-occurring information or complexity, it makes it unclear how people would learn from that pattern when it is located within the natural noise where it typically exists. Many have argued that human perception adapts to natural confounds in one's ecology (Gibson 1979; McArthur and Baron 1983; Todd and Gigerenzer 2000). People develop heuristics for perception by

learning how cues co-occur and what to pay attention to. Reducing stimuli to a focal cue (e.g., a face) may reveal a possible effect when humans view only that cue, but it does not explain how that cue is typically perceived when embedded amongst other cues. Social ecologies are known for having naturally confounded cues, such that views of forests, cities, and mountains each have distinct spectral signatures capturing typical arrangements of light, distance, and density (Torralba and Oliva 2003) and words that are semantically associated (e.g., *table-bed*) appear near each other in written works (Lund and Burgess 1996). Extracting stimuli from their natural environments thus necessarily limits scientists' claims about socialization because cues may be processed differently when embedded in typical social ecologies than when isolated from them.

3.3 | Correlational

A final approach to understanding how people learn gender stereotypes is correlational, looking at the covariation between pattern exposure (e.g., media consumption) and beliefs (e.g., gender stereotypes). For example, Halim et al. (2013) identified a fascinating association among four-year-old children; the more TV they watched, the more they thought boys were valued by society. This approach glimpses into socialization and points to important future directions, but conclusions about socialization from such findings are limited because scientists cannot isolate cause and effect. It is impossible to know whether exposure causes gender stereotypes, whether gender stereotypes cause people to engage with particular content, or if another variable is causing both exposure and stereotypes.

Socialization theories have relied to varying degrees on correlational methods, content analyses, and experiments with lab-generated stimuli. For example, Cultivation Theory relies primarily on correlational work and content analyses showing biased representations. Social Role Theory and Developmental Intergroup Theory are supported by extensive studies employing correlations and lab-generated stimuli. These approaches can provide scientists with pieces of the gender socialization puzzle, but they cannot *complete* the puzzle. We detail a methodological approach that capitalizes on the advantages of these methods while offering a way to trace gender beliefs from features of social ecologies: Cultural Snapshots (Weisbuch et al. 2017).

4 | A Cultural Snapshots Solution

Cultural Snapshots is a method well-suited to testing how features of shared social ecologies influence gender stereotypes held by group members. It allows scientists to systematically measure cultural patterns in natural ecologies and then manipulate those patterns to test their causal influence. This method capitalizes on strengths of the approaches detailed above and addresses some of the weaknesses by (a) sampling from stimuli that people from a group commonly encounter and (b) experimentally testing how the cultural pattern shapes beliefs and behavior using ecologically valid stimuli taken from people's social ecologies, thereby tracing beliefs back to patterns

commonly encountered by a population. Past methodological papers describing Cultural Snapshots have focused on social cognition broadly (Weisbuch et al. 2017) or race specifically (Pauker et al. *in press*, 2021, 2019). We shift our focus to gender as applying Cultural Snapshots to this topic requires careful consideration of various criteria, such as how to determine perceived gender, how to address gendered associations, and when to treat gender/gendered behavior as continuous or categorical. We consider these complexities in the following sections.

The first step in using Cultural Snapshots is identifying and quantifying a prevalent cultural pattern. Drawing on Adams and Markus's (2004) definition of culture as "explicit and implicit patterns of historically derived and selected ideas" (p. 341) and Sperber's (1996) definition of public representations as observable cues external to the mind, we define a cultural pattern as any co-variation of cues that is widespread within a group's social ecology (Weisbuch et al. 2017). The nature of the cultural patterns researchers measure is constrained only by logistics and creativity. In past work, cultural patterns have been sampled from mass media (e.g., TV, magazines; Lamer et al. 2022, 2025; Lamer and Weisbuch 2019; Wang et al. 2022; Weisbuch and Ambady 2009), social media (Lamer et al. 2018), publicly recorded images or videos from commonly encountered physical spaces (e.g., images of schools and common rooms; Miyamoto et al. 2006; Salter et al. 2020), and even interpersonal interactions (e.g., footage from police stops; Camp et al. 2021; Dietrich and Sands 2023).

The second step in using Cultural Snapshots is experimentally manipulating the cultural pattern and observing its effects. This step introduces two key strengths: (a) testing for causal influence and (b) testing how people respond to the pattern when the cues of interest are embedded in the naturally noisy social ecologies where they are typically encountered. To illustrate the steps of the Cultural Snapshots approach, we will detail a past project in which we explored how gender stereotypes of power and dominance are transmitted via gendered patterns of vertical placement (see Table 1; Lamer and Weisbuch 2019). Specifically, we were interested in whether images of men appear systematically higher than those of women in the social ecologies people encounter. We reasoned that such a pattern of *male spatial elevation* could reinforce traditional gender stereotypes of power and dominance, given that people associate higher vertical locations with powerful people, animals, and roles (Schubert 2005).

4.1 | Step 1: Quantify the Cultural Pattern

Being systematic in quantifying the cultural pattern is central to the Cultural Snapshots method. There are several places where bias may inadvertently enter the process of quantifying a cultural pattern, such as the snapshots being selected or the locations to draw those snapshots from. Even something that may seem objective, like the physical measurement of location, can involve subjectivity, such as deciding whether to measure a hat as part of the person's height. Researchers must develop a set of systematic rules for selecting snapshots and where to sample

those snapshots from. For our project, we identified the focal population and a social ecology that large swaths of that population would frequently encounter. We were also mindful of the hypothesized pattern and which ecologies would allow us to identify gender differences in vertical placement. Therefore, we needed a medium that U.S. Americans frequently encountered and would hold vertical location constant. Thus, we focused on popular magazines in the U.S., a medium that was frequently encountered at the time of sampling (Rosenstiel and Mitchell 2012). Given our interest in this commonly encountered social ecology, we started from a list of the 50 most widely circulated magazines in the U.S. We excluded magazines that did not contain many images of people (e.g., *Better Homes and Gardens*), that limited subscriptions to certain subsets of the population (e.g., *AARP*), and that did not reach the entire U.S. (e.g., *AARP Going Places*). From the remaining list, our goal was to select magazines that had breadth in their audiences so as to represent what people in the U.S. typically encounter. Therefore, we selected a range of magazines roughly split among different audiences: primarily women readers, primarily men readers, and general interest. With our 12 final magazines selected (e.g., *Cosmopolitan*, *Sports Illustrated*, *Time*), we then determined a systematic way to collect the snapshots and test for a pattern of male spatial elevation.

We selected six issues of each magazine published in 2011. We selected an issue published every other month for each magazine and divided each issue into five equal sections based on page number. We selected and measured the first page in each section that featured a woman and the first page in each section that featured a man. We defined gender as the categorical gender perceived by the research assistant completing the measurement. After measurements were complete, multiple research assistants coded each person's gender, allowing interrater reliability calculations and leading us to exclude images of children for whom there was often disagreement on perceived gender. Because we were interested in gender differences in vertical location, but not those inherently tied to gender differences in height, we selected only pages that contained a single image. A pilot study confirmed that the majority of pages in a magazine feature a single person on them.

We only selected images from a section if there was an eligible page featuring a woman and another eligible page featuring a man. We implemented this rule as it provided control over potential confounds. For example, images may be larger earlier in a magazine, or later pages may feature more advertisements. Therefore, if both pages were not available in a section, we replaced those pages with pages from an unused issue of the magazine. Using this selection procedure, we collected 634 images (317 of women and 317 of men). For some cultural patterns, it may be appropriate to expand the selection criteria to things associated with gender, not just people. We decided to focus solely on people, as this provided greater internal validity. However, objects, concepts, and animals are often stereotypically associated with gender in some way (e.g., basic shapes; Stroessner et al. 2020).

For each page, we measured the distance from the top of the page to the center of the target, dividing each page by its length to yield vertical location as a proportion of the page. Among our

TABLE 1 | Step-by-step cultural snapshots guide.

Step	Description	Example
Quantifying a cultural pattern	Identify a prevalent cultural pattern of interest to test cause-and-effect.	Male spatial elevation: men are located higher than women in visual media.
	Identify what population is commonly and frequently exposed to the hypothesized cultural pattern.	U.S. Americans.
	Identify an environment in which the cultural pattern commonly and frequently occurs for the focal population.	Magazines published in 2011.
	Identify the exemplars that define the environment.	Twelve of the most widely circulated magazines that year, targeting a range of audiences and featuring many images of people.
	Identify a representative sample of instances of the exemplars.	Systematically select six issues of each magazine published in 2011, dividing each issue into five equal portions and taking measurements of the first woman and the first man pictured in each section.
	Identify the variables of interest. These are defined by the research question.	Distance from top of the page to the center of the person pictured divided by page length.
Experimentally manipulate the cultural pattern	If subjective measurements are needed, have an independent sample of coders rate the variable(s) of interest.	Coder ratings of perceived gender.
	Create experimental conditions from the snapshots. There are two main methods: (1) select snapshots for a <i>traditional</i> condition that exemplifies the prevalent cultural pattern, and snapshots for a <i>reverse</i> condition that exemplifies the opposite pattern (e.g., selecting clips in which particular characters are treated positively or negatively: Lamer et al. 2022), or (2) select snapshots and edit them to fit into either condition (e.g., photoedit the location of women and men on magazine pages; Lamer and Weisbuch 2019).	The <i>male spatial elevation</i> condition contained pages featuring men located high and pages featuring women located low. The <i>female spatial elevation</i> condition contained those same pages with the spatial locations of the targets flipped; men were located low and women were located high.
	Randomly assign participants to condition to test how the cultural pattern impacts the variables of interest.	Assess whether exposure to male (vs. female) spatial elevation influences gender stereotypes about power and dominance.

final sample, women were placed lower on the pages than men, with women centered 48% from the top of the page and men centered 44% from the top of the page. Therefore, U.S. Americans—at least magazine-reading Americans—were exposed to a cultural pattern in which women appeared lower than men. The next step was to evaluate whether this subtle cultural pattern transmitted beliefs.

4.2 | Step 2: Experimentally Test Cultural Influence

We hypothesized that seeing a pattern in which men systematically appear higher than women would cause people to think that men are more powerful and dominant than women. To test

this hypothesis, we selected a subset of the 634 pages from our content analysis to experimentally manipulate whether people saw male spatial elevation, the culturally prevalent pattern, or *female spatial elevation*, the reverse. We could have created these conditions in two different ways: (1) select magazine pages for the male spatial elevation condition that feature men high and women low and select magazine pages for the female spatial elevation condition that feature women high and men low, or (2) select magazine pages and create two versions, one with the person located high on the page and another with the person located low on the page. Both approaches have their merits. For example, the former approach allows researchers to use unedited, original stimuli. We selected the latter approach, which allowed us to keep all other aspects of the magazine pages constant except where the person was pictured. For example, both conditions featured an advertisement with an image of a

woman laying on a pillow. In one condition, the page's components were rearranged so the image was at the top. In the other condition, the page's components were rearranged so the image was at the bottom. In making these edits, we ensured that the image was the same distance from the top of the page in one condition as the bottom of the page in the other condition and that the two versions were indistinguishable in terms of quality and esthetic appeal. This approach is not always best, though, especially when snapshots are difficult to edit. For example, in another set of studies, we sampled and quantified how positively television show characters behaved toward gender-stereotypical and gender-counterstereotypical co-characters in children's shows (Lamer et al. 2022). Such video clips would be difficult to edit and make look natural. Therefore, we *selected* clips that either exemplified the culturally prevalent pattern in which gender-stereotypical characters were treated more positively or clips that reversed that pattern.¹ This approach provides another benefit, too: it preserves natural confounds that could be important to the pattern being observed. As noted earlier, the human mind adapts to naturally co-occurring cues. Selecting rather than editing stimuli conserves these social ecological complexities. Nonetheless, after systematically selecting clips from each show based on valence, we ensured that the conditions were similar in terms of clip length and valence intensity, and featured the same target characters.

In the magazine studies, participants were randomly assigned to one of the two conditions, rating each of about 80 pages on aesthetic appeal. Participants then completed a gender stereotyping measure, reporting how dominant and powerful they typically found women and men to be. Across the seven studies we conducted with this manipulation, we observed a meta-analyzed effect of gendered spatial elevation: people who saw pages with men high and women low then endorsed gender stereotypes of power and dominance more strongly than those who saw pages with *women* high and *men* low. Using the Cultural Snapshots method, we concluded that people tune their beliefs to the subtle patterns they see in their social ecologies, consistent with tenets of Cultivation Theory and Developmental Intergroup Theory (albeit with an adult population). Distorted patterns in media shaped beliefs and people's implicit social cognition guided their gendered inferences about power and dominance. The Cultural Snapshots method enabled us to establish a causal relationship between cues common to social ecologies (i.e., gender and vertical location) and gender stereotypes related to power and dominance. These effects were small but relatively consistent.

5 | Conclusion

Cultural Snapshots grants researchers substantial leverage by optimizing ecological validity within an experimental approach, quantifying a pattern based on what the target population frequently sees (e.g., male spatial elevation in popular U.S. magazines) and testing how that pattern influences people when the relevant cues are embedded in complex social ecologies (e.g., how male spatial elevation influences stereotypes). Other work has explored how gender role norms are transmitted to children via patterns of nonverbal behavior (using

children's television as the social ecology; Lamer et al. 2022), how gendered leadership preferences are transmitted to adults via patterns of nonverbal behavior (using adult TV as the social ecology; Lamer et al. 2025), how weight bias is transmitted to women via patterns of nonverbal behavior (using adult TV as the social ecology; Weisbuch and Ambady 2009), and how victim blame is reinforced via patterns of sentence construction (using news articles as the social ecology; Bonagura et al. unpublished manuscript). Given that subtle patterns can strongly influence beliefs, it is valuable to have a systematic method for quantifying and testing patterns that reach an entire population. Previous studies have used content analyses, lab-generated stimuli, and correlational methods to examine socialization. Cultural Snapshots integrates the strengths of these methods, allowing researchers to test questions about socialization experimentally and with strengthened ecological validity.

5.1 | Limitations

This method is not without limitations, however, and these should be considered when implementing Cultural Snapshots. For example, although this method leverages ecological validity, perceivers only see the snapshots briefly and in a concentrated manner. Pattern exposure in social ecologies is typically diluted, spread across time and setting. It is unclear how more naturalistic, diluted exposure shapes effects. As posited in past work (see Lamer and Weisbuch 2019), accumulated naturalistic exposure yields stronger effects; people are regularly exposed to the pattern, but its impact on beliefs may occur without awareness, preventing people from counter-arguing as they may if the pattern was overt (e.g., explicit sexist statements). Another consideration is that this methodology, especially the content analysis, is time-consuming and requires careful attention to detail. The snapshots must reflect the population's social ecology, requiring large stimulus sets and, thoughtful exemplar selection/matching, though new technologies like natural language processing (Bailey et al. 2022) and AI emotion identification (Fujiwara and Yokomitsu 2021) can be leveraged to ease the burden of pattern quantification. Finally, the effect sizes observed in experimental work using this methodology are often small-to-medium (e.g., $d = 0.20$ in the magazine studies). Large sample sizes and replications are often required to ensure confidence in the presence, direction, and size of the effect. To effectively benefit from Cultural Snapshots' strengths, researchers should carefully consider these limitations as they determine their timeline, approach, and conclusions.

5.2 | Future Directions

Gender is a rapidly evolving concept in lay and scientific domains (Hyde et al. 2019). In this section, we discuss how Cultural Snapshots could contribute to contemporary topics in gender, such as intersectionality and nonbinary identity, as well as how it could contribute to understanding socialization in the context of a growing reliance on algorithmically personalized digital media.

5.2.1 | Intersectionality

An intersectional approach (Crenshaw 1989) applied to Cultural Snapshots could contribute meaningfully to questions about pattern extraction and gender stereotype transmission in cultural contexts. For example, it is unclear when perceivers integrate exemplars across groups when extracting a cultural pattern related to gender (e.g., across race, sexual orientation, or age). Perceivers may generalize across race when observing where women and men are located on the pages of magazines, such that seeing racially diverse exemplars has a similar effect as seeing exemplars of a single race. Alternatively, the extraction process may be race-specific, such that perceivers base their gender stereotypes on where exemplars of a single racial group are located and ignore exemplars of other groups, or update gender stereotypes about each race separately. According to the Lens Model of Intersectional Stereotyping, when a perceiver observes an individual, the social context can cue them to a unidimensional lens (e.g., gender) or a multidimensional lens (e.g., race and gender; Petsko et al. 2022). Understanding how these lenses shape pattern extraction and gender stereotype socialization has important scientific and lay implications.

5.2.2 | Gender Diversity

Although gender is often conceptualized as two distinct categories, gender expression is diverse, leading to questions about how people weigh androgynous exemplars. GLAAD's 2023–2024 report on LGBTQ representation found 24 non-binary characters appeared regularly on primetime TV, a notable increase from their 2020–2021 report, which did not identify a single non-binary character (Deerwater et al. 2024; Townsend and Deerwater 2021). The growing visibility of gender non-conforming characters in media raises important questions about how prototypicality influences the communication of gender norms. For example, perceivers might be less likely to learn gender norms from androgynous or gender non-conforming individuals, as stereotypes are applied more readily to those who fit prototypical gender representations (Livingston and Brewer 2002). Thus, studying gender non-conforming individuals in cultural contexts can provide insight into how an exemplar's typicality shapes the pattern being extracted or the inferences being made about a group.

5.2.3 | Changes to the Media Landscape

One reason gender representations in media have diversified recently is changes to the media landscape. Early uses of Cultural Snapshots employed primetime television shows that garnered up to 100 million weekly viewers (Weisbuch and Ambady 2009; Weisbuch et al. 2009). Today, televised media consumption has shifted from heavily relying on cable television to a diversified approach involving streaming services and algorithms matching media to interested audiences (Arditi 2021). The changing landscape introduces challenges and opportunities for Cultural Snapshots. For example, researchers may need to be more intentional about sampling media that reaches different subgroups (e.g., political conservatives, moderates, and

liberals) or may focus on smaller niche populations. Indeed, people in the U.S. can encounter entirely different media depending on their algorithms and viewing habits (Kim 2017). As people consume content specific to their interests, they might be disproportionately exposed to content consistent with their ideological beliefs (e.g., content aligning with traditional gender norms; Regehr et al. 2024), further strengthening these beliefs. Thus, Cultural Snapshots can be leveraged to assess how individuals with varying ideological beliefs are learning gender stereotypes according to what their algorithm presents.

In sum, the rapidly evolving landscapes of not only media, but also gender and its intersections raise important questions about how gender stereotypes are socialized, questions that Cultural Snapshots can be leveraged to answer.

5.3 | Summary

For researchers looking to make conclusions about the transmission of gender stereotypes, Cultural Snapshots is equipped to capture contextually relevant patterns of gender representation, allowing for a more accurate understanding of how these stereotypes are communicated through culture and learned by perceivers. When considering gendered patterns, researchers should consider questions like how a typical perceiver categorizes gender, how gender non-conformity of targets or perceivers impacts pattern perception, and whether media caters to niche or generalized audiences. Shared social ecologies are replete with gendered patterns. With Cultural Snapshots, researchers can quantify and experimentally test those patterns.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹ Note that we could have conceptualized gender-stereotypicality either as we did at the level of the character (e.g., a tomboy) or at the level of the interaction (e.g., a girl who acts more masculine in a particular clip). We opted for the former since gender-stereotypical and -counterstereotypical prototypes are common to children's television. Other settings may warrant a different approach, though quantifying gender-stereotypicality can be challenging without also wrestling with how coder's beliefs about gender shape their ratings.

References

- Adams, G., and H. R. Markus. 2004. "Toward a Conception of Culture Suitable for a Social Psychology of Culture." In *The Psychological Foundations of Culture*, edited by M. Schaller and C. S. Crandall, 335–360. Lawrence Erlbaum Associates. <https://doi.org/10.4324/9781410608994>.
- Alt, N. P., P. N. Dayley, A. G. Faulkner, and K. L. Johnson. 2024. "Gender/Sex Categories and Gendered Cues in People Perception: The Influence of Gender/Sex Ratio and Gendered Appearance on Group Judgements." *Social Cognition* 42, no. 2: 112–132. <https://doi.org/10.1521/SOCO.2024.42.2.112>.
- Alto, A. T., and T. M. Mandalaywala. 2023. "Boys and Girls, Men and Women: Do Children Take Stimulus Age Into Account When

- Expressing Gender Stereotypes?" *Developmental Psychology* 59, no. 4: 637–643. <https://doi.org/10.1037/dev0001504>.
- Arditi, D. 2021. *Streaming Culture: Subscription Platforms and the Unending Consumption of Culture*. Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83982-768-620210008>.
- Bailey, A. H., A. Williams, and A. Cimpian. 2022. "Based on Billions of Words on the Internet, People = Men." *Science Advances* 8, no. 13: eabm2463. <https://doi.org/10.1126/sciadv.abm2463>.
- Bareket, O., and S. T. Fiske. 2023. "A Systematic Review of the Ambivalent Sexism Literature: Hostile Sexism Protects Men's Power; Benevolent Sexism Guards Traditional Gender Roles." *Psychological Bulletin* 149, no. 11–12: 637–698. <https://doi.org/10.1037/bul0000400>.
- Bian, L., S.-J. Leslie, and A. Cimpian. 2017. "Gender Stereotypes About Intellectual Ability Emerge Early and Influence Children's Interests." *Science* 355, no. 6323: 389–391. <https://doi.org/10.1126/science.aah6524>.
- Bigler, R. S., and L. S. Liben. 2007. "Developmental Intergroup Theory: Explaining and Reducing Children's Social Stereotyping and Prejudice." *Current Directions in Psychological Science: A Journal of the American Psychological Society* 16, no. 3: 162–166. <https://doi.org/10.1111/j.1467-8721.2007.00496.x>.
- Bonagura, D., Bluhm, J., Bunnell, C., Lou, W., and Lamer, S. A. unpublished manuscript. Survivors as Agents: How Linguistic Agency Impacts Perceptions of Survivors and Perpetrators of Sexual Assault.
- Camp, N. P., R. Voigt, D. Jurafsky, and J. L. Eberhardt. 2021. "The Thin Blue Waveform: Racial Disparities in Officer Prosody Undermine Institutional Trust in the Police." *Journal of Personality and Social Psychology* 121, no. 6: 1157–1171. <https://doi.org/10.1037/pspa0000270.supp>.
- Carpinella, C. M., J. M. Chen, D. L. Hamilton, and K. L. Johnson. 2015. "Gendered Facial Cues Influence Race Categorizations." *Personality and Social Psychology Bulletin* 41, no. 3: 405–419. <https://doi.org/10.1177/0146167214567153>.
- Crenshaw, K. 1989. "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics." *University of Chicago Legal Forum* 1989, no. 1: 139–167. <http://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8>.
- Deerwater, R., M. Townsend, and A. Hurwitz. 2024. "Where We Are on TV 2023–2024." *Gay & Lesbian Alliance Against Defamation*. <https://glaad.org/whereweareontv23/acknowledgments/>.
- Dietrich, B. J., and M. L. Sands. 2023. "Seeing Racial Avoidance on New York City Streets." *Nature Human Behaviour* 7, no. 8: 1275–1281. <https://doi.org/10.1038/s41562-023-01589-7>.
- Eagly, A. H., C. Nater, D. I. Miller, M. Kaufmann, and S. Sczesny. 2020. "Gender Stereotypes Have Changed: A Cross-Temporal Meta-Analysis of U.S. Public Opinion Polls From 1946 to 2018." *American Psychologist* 75, no. 3: 301–315. <https://doi.org/10.1037/amp0000494>.
- Eagly, A. H., and V. J. Steffen. 1984. "Gender Stereotypes Stem From the Distribution of Women and Men Into Social Roles." *Journal of Personality and Social Psychology* 46, no. 4: 735–754. <https://doi.org/10.1037/0022-3514.46.4.735>.
- Feldman, A., and R. D. Gill. 2019. "Power Dynamics in Supreme Court Oral Arguments : The Relationship Between Gender and Justice-To-Justice Interruptions." *Justice System Journal* 40, no. 3: 173–195. <https://doi.org/10.1080/0098261X.2019.1637309>.
- Freeman, N. K. 2007. "Preschoolers' Perceptions of Gender Appropriate Toys and Their Parents' Beliefs About Genderized Behaviors: Miscommunication, Mixed Messages, or Hidden Truths?" *Early Childhood Education Journal* 34, no. 5: 357–366. <https://doi.org/10.1007/s10643-006-0123-x>.
- Fujiwara, K., and K. Yokomitsu. 2021. "Video-Based Tracking Approach for Nonverbal Synchrony: A Comparison of Motion Energy Analysis and OpenPose." *Behavior Research Methods* 53, no. 6: 2700–2711. <https://doi.org/10.3758/s13428-021-01612-7>.
- Gálvez, R. H., V. Tiffenberg, and E. Altszyler. 2019. "Half a Century of Stereotyping Associations Between Gender and Intellectual Ability in Films." *Sex Roles* 81, no. 9–10: 643–654. <https://doi.org/10.1007/s11199-019-01019-x>.
- Ganahl, D. J., T. J. Prinsen, and S. B. Netzley. 2003. "A Content Analysis of Prime Time Commercials: A Contextual Framework of Gender Representation." *Sex Roles* 49, no. 9–10: 545–551. <https://doi.org/10.1023/A:1025893025658>.
- Gerbner, G. 1998. "Cultivation Analysis: An Overview." *Mass Communication & Society* 1, no. 3–4: 175–194. <https://doi.org/10.1080/15205436.1998.9677855>.
- Gibson, J. J. 1979. *The Ecological Approach to Visual Perception*. Houghton, Mifflin and Company.
- Halim, M. L., D. N. Ruble, and C. S. Tamis-LeMonda. 2013. "Four-Year-Olds' Beliefs About How Others Regard Males and Females." *British Journal of Developmental Psychology* 31, no. 1: 128–135. <https://doi.org/10.1111/j.2044-835X.2012.02084.x>.
- Hilliard, L. J., and L. S. Liben. 2010. "Differing Levels of Gender Salience in Preschool Classrooms: Effects on Children's Gender Attitudes and Intergroup Bias." *Child Development* 81, no. 6: 1787–1798. <https://doi.org/10.1111/j.1467-8624.2010.01510.x>.
- Hurst, K. 2024. *U.S. Women Are Outpacing Men in College Completion, Including in Every Major Racial and Ethnic Group*. Pew Research Center. (November). <https://www.pewresearch.org/short-reads/2024/11/18/us-women-are-outpacing-men-in-college-completion-including-in-every-major-racial-and-ethnic-group/>.
- Hyde, J. S., R. S. Bigler, D. Joel, C. C. Tate, and S. M. van Anders. 2019. "The Future of Sex and Gender in Psychology: Five Challenges to the Gender Binary." *American Psychologist* 74, no. 2: 171–193. <https://doi.org/10.1037/amp0000307>.
- Kahlor, L., and M. S. Eastin. 2011. "Television's Role in the Culture of Violence toward Women: A Study of Television Viewing and the Cultivation of Rape Myth Acceptance in the United States." *Journal of Broadcasting & Electronic Media* 55, no. 2: 215–231. <https://doi.org/10.1080/08838151.2011.566085>.
- Kim, S. A. 2017. "Social Media Algorithms: Why You See What You See." *Georgetown Law Technology Review* 2, no. 1: 147. <https://georgetownlawtechreview.org/social-media-algorithms-why-you-see-what-you-see/GLTR-12-2017/>.
- Koenig, A. M., and A. H. Eagly. 2014. "Evidence for the Social Role Theory of Stereotype Content: Observations of Groups' Roles Shape Stereotypes." *Journal of Personality and Social Psychology* 107, no. 3: 371–392. <https://doi.org/10.1037/a0037215>.
- Lamer, S. A., H. B. Beck, L. ten Brinke, and G. M. Preston. 2025. "How Culturally Prevalent Patterns of Nonverbal Behavior Can Influence Discrimination Against Women Leaders." *Psychology of Women Quarterly* 49, no. 2: 220–242. <https://doi.org/10.1177/03616843251318964>.
- Lamer, S. A., P. Dvorak, A. M. Biddle, K. Pauker, and M. Weisbuch. 2022. "The Transmission of Gender Stereotypes Through Televised Patterns of Nonverbal Bias." *Journal of Personality and Social Psychology* 123, no. 6: 1315–1355. <https://doi.org/10.1037/pspi0000390>.
- Lamer, S. A., T. D. Sweeny, M. L. Dyer, and M. Weisbuch. 2018. "Rapid Visual Perception of Interracial Crowds: Racial Category Learning From Emotional Segregation." *Journal of Experimental Psychology: General* 147, no. 5: 683–701. <https://doi.org/10.1037/xge0000443>.
- Lamer, S. A., and M. Weisbuch. 2019. "Men Over Women: The Social Transmission of Gender Stereotypes Through Spatial Elevation." *Journal of Experimental Social Psychology* 84: 103828. <https://doi.org/10.1016/j.jesp.2019.103828>.

- Lee, K. Y., Reis, H. T., and Rogge, R. D. 2020. "Seeing the World in Pink and Blue: Developing and Exploring a New Measure of Essentialistic Thinking About Gender." *Sex Roles*, 83, no. 11–12: 685–705. <https://doi.org/10.1007/s11199-020-01141-1>.
- Livingston, R. W., and M. B. Brewer. 2002. "What Are We Really Priming? Cue-Based Versus Category-Based Processing of Facial Stimuli." *Journal of Personality and Social Psychology* 82, no. 1: 5–18. <https://doi.org/10.1037//0022-3514.82.1.5>.
- Lund, K., and C. Burgess. 1996. "Producing High-Dimensional Semantic Spaces From Lexical Co-Occurrence." *Behavior Research Methods, Instruments, & Computers* 28, no. 2: 203–208. <https://doi.org/10.3758/BF03204766>.
- Luther, C. A., and J. R. Legg. 2010. "Gender Differences in Depictions of Social and Physical Aggression in Children's Television Cartoons in the US." *Journal of Children and Media* 4, no. 2: 191–205. <https://doi.org/10.1080/17482791003629651>.
- Martin, C. L., and D. Ruble. 2004. "Children's Search for Gender Cues: Cognitive Perspectives on Gender Development." *Current Directions in Psychological Science: A Journal of the American Psychological Society* 13, no. 2: 67–70. <https://doi.org/10.1111/j.0963-7214.2004.00276.x>.
- McArthur, L. Z., and R. M. Baron. 1983. "Toward an Ecological Theory of Social Perception." *Psychological Review* 90, no. 3: 215–238. <https://doi.org/10.1037/0033-295X.90.3.215>.
- Miyamoto, Y., R. E. Nisbett, and T. Masuda. 2006. "Culture and the Physical Environment: Holistic Versus Analytic Perceptual Affordances." *Psychological Science* 17, no. 2: 113–119. <https://doi.org/10.1111/j.1467-9280.2006.01673.x>.
- Mook, D. G. 1983. "In Defense of External Invalidity." *American Psychologist* 38, no. 4: 379–387. <https://doi.org/10.1037/0003-066X.38.4.379>.
- Pauker, K., E. Brey, S. A. Lamer, and M. Weisbuch. 2019. "Cultural Snapshots: A Method to Capture Cultural Contexts in Children's Development." *Advances in Child Development and Behavior*, 56: 141–181. <https://doi.org/10.1016/bs.acdb.2018.11.002>.
- Pauker, K., S. A. Lamer, S. Ansari, and M. Weisbuch. 2021. "Cultural Snapshots: Identifying Cultural Patterns That Influence Implicit Racial Bias." In *Cultural Methods in Psychology: Describing and Transforming Cultures*, edited by K. C. McLean, 109–145. Oxford University Press. <https://doi.org/10.1093/oso/9780190095949.003.0004>.
- Pauker, K., M. Weisbuch, and S. A. Lamer. in press. "Social Transmission of Bias." *Advances in Experimental Social Psychology*, edited by B. Gawronski, 71. Academic Press.
- Petsko, C. D., A. S. Rosette, and G. V. Bodenhausen. 2022. "Through the Looking Glass: A Lens-Based Account of Intersectional Stereotyping." *Journal of Personality and Social Psychology* 123, no. 4: 763–787. <https://doi.org/10.1037/pspi0000382>.
- Plant, E. A., K. C. Kling, and G. L. Smith. 2004. "The Influence of Gender and Social Role on the Interpretation of Facial Expressions." *Sex Roles* 51, no. 3–4: 187–196. <https://doi.org/10.1023/b:sers.0000037762.10349.13>.
- Regehr, K., C. Shaugnessy, M. Zhao, and N. Shaugnessy. 2024. *Safer Scrolling: How Algorithms Popularise and Gamify Online Hate and Misogyny for Young People*. University College London and University of Kent. <https://www.ascl.org.uk/ASCL/media/ASCL/Help%20and%20advice/Inclusion/Safer-scrolling.pdf>.
- Rosenstiel, T., and A. Mitchell. 2012. *The Future of Mobile News: The Explosion in Mobile Audiences and a Close Look at what it Means for News*. Pew Research Center.
- Salter, P. S., D. K. Grabsch, J. D. Crist, J. Lagisetty, L. B. Dyer, and E. Olvera. 2020. "CUE-Ing Student Success: Evaluating Academic Support Space in Residential Communities." *Journal of College and University Student Housing* 46, no. 2: 66–87.
- Schubert, T. W. 2005. "Your Highness: Vertical Positions as Perceptual Symbols of Power." *Journal of Personality and Social Psychology* 89, no. 1: 1–21. <https://doi.org/10.1037/0022-3514.89.1.1>.
- Shakin, M., Shakin, D., and Sternglanz, S. H. 1985. "Infant Clothing: Sex Labeling for Strangers." *Sex Roles*, 12, no. 9–10: 955–964. <https://doi.org/10.1007/BF00288179>.
- Shutts, K., C. K. P. Roben, and E. S. Spelke. 2013. "Children's Use of Social Categories in Thinking About People and Social Relationships." *Journal of Cognition and Development* 14, no. 1: 35–62. <https://doi.org/10.1080/15248372.2011.638686>.
- Smiler, A. P., and Gelman, S. A. 2008. "Determinants of Gender Essentialism in College Students." *Sex Roles*, 58, no. 11–12: 864–874. <https://doi.org/10.1007/s11199-008-9402-x>.
- Solbes-Canales, I., S. Valverde-Montesino, and P. Herranz-Hernández. 2020. "Socialization of Gender Stereotypes Related to Attributes and Professions Among Young Spanish School-Aged Children." *Frontiers in Psychology* 11: 609. <https://doi.org/10.3389/fpsyg.2020.00609>.
- Sperber, D. 1996. *Explaining Culture: A Naturalistic Approach*. Blackwell.
- Stroessner, S. J., J. Benitez, M. A. Perez, A. B. Wyman, C. M. Carpinella, and K. L. Johnson. 2020. "What's in a Shape? Evidence of Gender Category Associations With Basic Forms." *Journal of Experimental Social Psychology* 87: 103915: Article 103915. <https://doi.org/10.1016/j.jesp.2019.103915>.
- Todd, P. M., and G. Gigerenzer. 2000. "Précis of Simple Heuristics That Make Us Smart." *Behavioral and Brain Sciences* 23, no. 5: 727–780. <https://doi.org/10.1017/S0140525X00003447>.
- Torralba, A., and A. Oliva. 2003. "Statistics of Natural Image Categories." *Network (Bristol)* 14, no. 3: 391–412. https://doi.org/10.1088/0954-898X_14_3_302.
- Townsend, M., and R. Deerwater. 2021. "Where We Are on TV 2020–2021." *Gay & Lesbian Alliance Against Defamation*. <https://glaad.org/whereweareontv20>.
- U.S. Bureau of Labor Statistics. 2025. Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity. (January). <https://www.bls.gov/cps/cpsaat11.htm>.
- Wang, M. M., A. Cardarelli, S. J. Leslie, and M. Rhodes. 2022. "How Children's Media and Teachers Communicate Exclusive and Essentialist Views of Science and Scientists." *Developmental Psychology* 58, no. 8: 1455–1471. <https://doi.org/10.1037/dev0001364>.
- Weisbuch, M., and N. Ambady. 2009. "Unspoken Cultural Influence: Exposure to and Influence of Nonverbal Bias." *Journal of Personality and Social Psychology* 96, no. 6: 1104–1119. <https://doi.org/10.1037/a0015642>.
- Weisbuch, M., S. A. Lamer, E. Treinen, and K. Pauker. 2017. "Cultural Snapshots: Theory and Method." *Social and Personality Psychology Compass* 11, no. 9: e12334. <https://doi.org/10.1111/spc3.12334>.
- Weisbuch, M., K. Pauker, and N. Ambady. 2009. "Subtle Transmission of Race Bias Via Televised Nonverbal Behavior." *Science* 326, no. 5960: 1711–1714. <https://doi.org/10.1126/science.1178358>.
- Zhao, S., P. Setoh, D. Storage, and A. Cimpian. 2022. "The Acquisition of the Gender-Brilliance Stereotype: Age Trajectory, Relation to Parents' Stereotypes, and Intersections With Race/Ethnicity." *Child Development* 93, no. 5: e581–e597. <https://doi.org/10.1111/cdev.13809>.