# Instructions (for All): On Differences and Biases in How-to Guides for Specific Audiences

*Keywords: Instructions, Systematic Biases, Social Stereotypes, Targeting, Classification*

## Extended Abstract

*How-to guides* provide practical instructions that help humans to achieve specific goals. In the past decades, such guides attracted interest across many computational communities (Branavan et al., 2009; Chu et al., 2017; Anthonio et al., 2020). Resources such as wikiHow, a collaboratively edited online platform for instructional texts, make it possible to scale research efforts to hundreds of thousands of articles. By covering an ever-increasing number of guides, including niche topics and articles for minority groups, there is also an increasing risk of perpetuating stereotypes and jeopardizing general accessibility. In fact, we notice that wikiHow already contains articles written for specific target groups as well as articles that exist in different versions for different audiences. The example below shows two articles with the same *title*, "Act Like a Kid Again", one with the *indicator* '(Girls)' and one with '(Boys)':

| *Act Like a Kid Again (Girls)* | *Act Like a Kid Again (Boys)* |
| --- | --- |
| **Eat well and exercise**, but don't obsess about your body. Be healthy without stressing too much about it. (. . . ) Generally, **go for lots of fruits and veggies**. And even though kids love sugar, **don't eat too much** of it! | Eat your childhood favorite food. Recollect **every snack**, chocolates, ice cream, candy bars, cotton candy and **everything that you loved as a kid** or would make you feel pampered. Eat as per your capacity |

Among other things, we find that such articles dramatically differ in terms of details. For example, the texts highlighted above vary in how much they focus on issues potentially related to body images. As such, the articles reflect *disparate standards*, which ultimately may contribute to discrimination (Prentice and Carranza, 2002). The specific example can also be linked to observations of gender differences in weight concerns from psychology (Dougherty et al., 2022), which might represent a reason for *disparate treatment*.

We perform a computational study to systematically find out whether and to what extent articles for different target groups can be distinguished automatically. Using how-to guides collected from wikihow, we define two binary classification tasks in which specific articles are to be assigned to a target group, based on the explicit indicators present in the data. Specifically, we distinguish between articles for women and men (W–M) and between articles for kids and teenagers (K–T).[1] In the light of preliminary findings from two case studies, we define features on length, content and style, and test them using simple logistic regression classifiers.

The results of our computational study (see Table 1 in the Appendix for details) show that, in many cases, it is possible to automatically predict for which audience a given guide was written. Through manual and computational analysis, we find that this success is not merely based on different topics covered for each target group, but that they indeed differ in terms of the defined features (see Table 2 for example sentences with selected style/content features).

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[1]Note that while the selected audiences follow discrete categories, we explicitly caution that individual readers can only be represented on a continuum.

Even though the audience-specific characteristics used in our study are by no means exhaustive, our straightforward approach allowed us to identify, qualitatively and quantitatively, debatable differences in how wikiHow guides present particular topics to specific target groups. While there is an inevitable need for differences in vocabulary when speaking about physical features or body parts, it is at best unclear in which ways how-to guides about human interactions or self-presentation should cast significant differences. Some of the differences that we observe have already been critically discussed in the context of previous social science research. For example, it is well-known that labels such as 'cute' are used pejoratively as a form of social control (Talbot, 2019) and that prescriptive components of gender stereotypes in education contribute to discrimination (Kollmayer et al., 2018).

Exposing readers to cultural messages and beliefs about age, gender or other factors cannot be avoided entirely, especially on a collaboratively edited online platform. In fact, it seems to be a challenge for any pluralistic society to find a balance between communicating traditional values and empowering everyone. It is therefore all the more important for a comprehensive understanding to determine when and in what form social norms are conveyed. As such, we view the contributions of this work, namely our collection of audience-specific guides and computational methods for identifying and verifying differences, as a valuable connecting point to raise awareness of potential issues and to foster interdisciplinary dialogue for future research.

# References

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# Appendix

| Model | W–M | K–T |
|---|---|---|
| Majority baseline | 0.47 | 0.34 |
| Article length | 0.47 | 0.61 |
| Article content (n-grams) | 0.59 | **0.78** |
| Article style (lexical & syntactic) | 0.58 | 0.67 |
| `combined` (length, content, style) | **0.71** | **0.78** |

Table 1: Macro F$_1$-scores on the test sets.

| | Feature(s) | Example | Title |
|---|---|---|---|
| **W** | cute, makeup | Do <u>cute</u> <u>makeup</u>. | Look Cute |
| | wasn't | She most likely <u>wasn't</u> wearing the right colors for her skin tone. | Go from Ugly to Popular |
| **M** | hers | Slowly move your hand towards <u>hers</u> … | Know if Your Crush Likes You Back |
| | theirs | Being a good partner is all about … adjusting your style to suit <u>theirs</u>. | Grind |
| **K** | name | Think of your blog's <u>name</u>. | Write a Blog |
| | kid | … even if you're a <u>kid</u>, there are ways to bank a few extra bucks. | Make Money |
| **T** | dress | <u>Dress</u> up, make it look important. | Know What to Wear on Dates |
| | teen | When you're a <u>teen</u> with a busy schedule, it can be difficult … | Stay Active After School |

Table 2: Sample of the top-10 most predictive features and example sentences