Ambient Belonging Cues In Digital Spaces

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Introduction

- Belonging is a basic human need with substantial impact on overall health and well-being (e.g., Baumeister & Leary, 1995). In academia, facilitating welcoming spaces for marginalized group members not only increased positive affiliation with their institution and overall wellness, but also had a significant positive impact on students' overall academic achievement and retention (Brannon & Lin, 2021; Suhlmann et al., 2018).

- The presence of ambient identity cues, socially symbolic objects that communicate stereotypes about group members inhabiting a given environment, can powerfully impact perceptions of belonging and interest in pursuing certain domains (Cheryan et al., 2009).

- Of the limited work in digital contexts, belonging cues have been found to be particularly important for individuals new to the space (first year students on Facebook; Whillans & Chen, 2018). In academia, prior work has established differential cues on university STEM department pages impacting women's motivation and interest to pursue those fields (Yalcinkaya et al., 2021). What has yet to be explored, however, is the impact of cues in digital spaces of non-specific/neutral domains.

- The current work seeks to establish differential cues that may be barriers to prospective undergraduate students' interest in colleges and universities as a function of institution's home pages.

Hypotheses

Institutions will utilize greater numbers of ambient cues that cater to the student identities primarily served by that institution. While largely exploratory regarding themes, it was expected that:
- Male-serving and Female-serving institutions will use more gendered language.
- Minority-serving institutions will utilize more themes emphasizing community and belonging.
- Minority-serving institutions will utilize more themes celebrating diversity.

Table 1.

College Gender	Majority Race of Institution	N
All Gender	PWI	10
	HBCU	9
	TRIBAL	7
	TOTAL	26
All Male	PWI	3
	HBCU	1
	TOTAL	4
All Female	PWI	5
	HBCU	1
	TOTAL	6
Total	PWI	18
	HBCU	11
	TRIBAL	7
	TOTAL	36

Gender Category Example

"Bond with other women of color working to become phenomenal scholars and global leaders" (All Female, HBCU)

"Get ready to join the sisterhood" (All Female, HBCU).

Belongingness Category Example

Ready to Join the NU Community? (All Gender, PWI)

Method

- A list of 1799 four-year degree-granting institutions in the United State was generated using the National Center of Education Statistics Integrated Postsecondary Education Data System, as guided by the 2018 Carnegie Classification standards. From this list, a stratified random sample of 36 institutions were selected according to institutional categories of interest (College Gender and Race/Ethnicity Served) (See Table 1).

- Among our sample institutions, text from their corresponding "Welcome" and "About" pages of their institution websites were collected and analyzed through both an inductive thematic approach and subsequent analysis using the LIWC dictionary (LIWC; Pennebaker et al., 2001) and created terms based on prior assessment.

Results

Differences in Belonging and Acceptance

Table 2.

College Race	College Gender	Mean (SD) Belonging*	Diversity**
Majority Serving (PWI)	All Gender	3.60 (1.12)	0.44 (0.38)
	All Male	3.72 (0.76)	0.09 (0.15)
	All Female	3.95 (0.88)	0.44 (0.32)
	Total	3.72 (0.97)	0.38 (0.35)
Minority Serving (HBCU/Tribal)	All Gender	3.08 (0.98)	0.52 (0.45)
	All Male	4.61 (-)	0.00 (-)
	All Female	4.81 (-)	0.11 (-)
	Total	3.26 (1.06)	0.46 (0.45)
Total	All Gender	3.28 (1.05)	0.49 (0.42)
	All Male	3.94 (0.77)	0.07 (0.13)
	All Female	4.09 (0.86)	0.38 (0.32)
	Total	3.49 (1.03)	0.42 (0.40)

* The Belonging category was comprised by combining the family, social, friends, and affect categories of the LIWC 2015 dictionary.
** The Diversity category was from our own created dictionary.

- First, an inductive thematic analysis was conducted to generate themes for further review:
- Belonging Words appear to be more frequent in All Male/All Female institutions and majority-serving institutions. Specifically, all female institutions use more Belonging Words than All Gender and Majority Serving institutions use more Belonging Words than Minority Serving institutions (See Table 2).
- Future focused related words appear to be more frequent in All Male institutions. All Male institutions use more future focused words than All Gender/All female institutions (See Table 3).
- Diversity Words appear to be more frequent in All Gender and All Female institutions than All Male institutions (See Table 2).
- Academic Words seem to be similar across all institutions (See Table 3).
- Further thematic analysis was done to examine the mean of amount female references and male references (See Figures 1 and 2). As expected, All Male colleges had the most amount of male references, and All Female colleges has the most amount of Female references. These results are further illustrated in Figure 1 and Figure 2.

Differences in Academics

Table 3.

College Race	College Gender	Mean (SD) Academic	Achieve	FocusFuture
Majority Serving (PWI)	All Gender	2.76 (1.52)	3.56 (1.19)	0.90 (0.49)
	All Male	2.34 (0.79)	4.02 (0.94)	1.47 (0.41)
	All Female	2.77 (1.45)	4.22 (1.37)	1.11 (0.46)
	Total	2.69 (1.35)	3.82 (1.17)	1.05 (0.49)
Minority Serving (HBCU/Tribal)	All Gender	2.59 (0.95)	3.38 (1.75)	1.19 (0.96)
	All Male	2.93 (-)	3.96 (-)	1.47 (-)
	All Female	3.06 (-)	3.74 (-)	0.45 (-)
	Total	2.64 (0.90)	3.44 (1.65)	1.17 (0.92)
Total	All Gender	2.66 (1.18)	3.45 (1.53)	1.08 (0.81)
	All Male	2.49 (0.74)	4.00 (0.77)	1.47 (0.33)
	All Female	2.82 (1.30)	4.14 (1.24)	1.00 (0.49)
	Total	2.66 (1.13)	3.63 (1.43)	1.11 (0.73)

Discussion and Future Directions

- From our research, we found an expected effect of gendered words on websites of gendered colleges. When thematically looking at belongingness words from our own dictionary the larger mean for majority serving institutions could be explained by wanting to increase the amount of diversity at the institution. Whereas minority serving institutions (HBCU/Tribal) did not feel the need to use belonging words because their student body is primarily made up of minority students, belongingness may be assumed since they are in the majority.
- Interestingly, from our thematic assessment, All Male colleges had less diversity words and more future focused words, which could mean textual cues targeting just men differ from those targeting women/a co-ed audience.
- Our hypotheses were both simultaneously proven and disproven in that All Male/All Female Colleges had more words that targeted the majority gender identity. While the majority serving colleges (PWI) had more words that targeted minority identities.

- Expanding the number of colleges in each of our stratified randomly sampled categories is a future step to obtain a larger sample size and make the results found more generalizable.
- For further analysis of the college websites, we are looking to use NVivo to qualitatively analyze the images portrayed on the "Welcome" and "About" pages. Once coded, we will be able to see the general themes of what images colleges tend to use.
- In a future study, we will be creating our own website based from text and image cues we found in this study. Then, have participants answer questions regarding our college website, to evaluate belonging to see what students like and dislike in college websites.
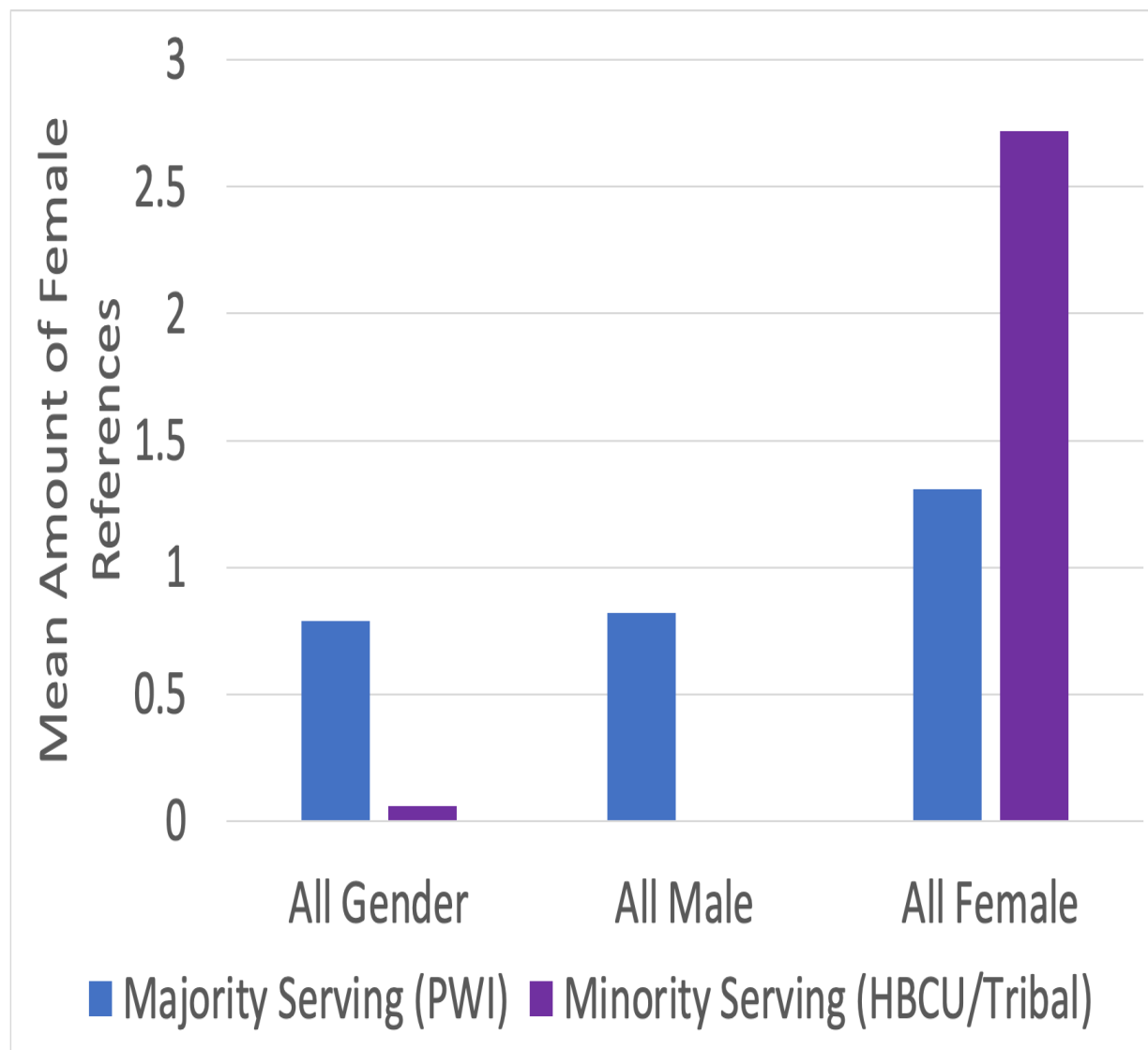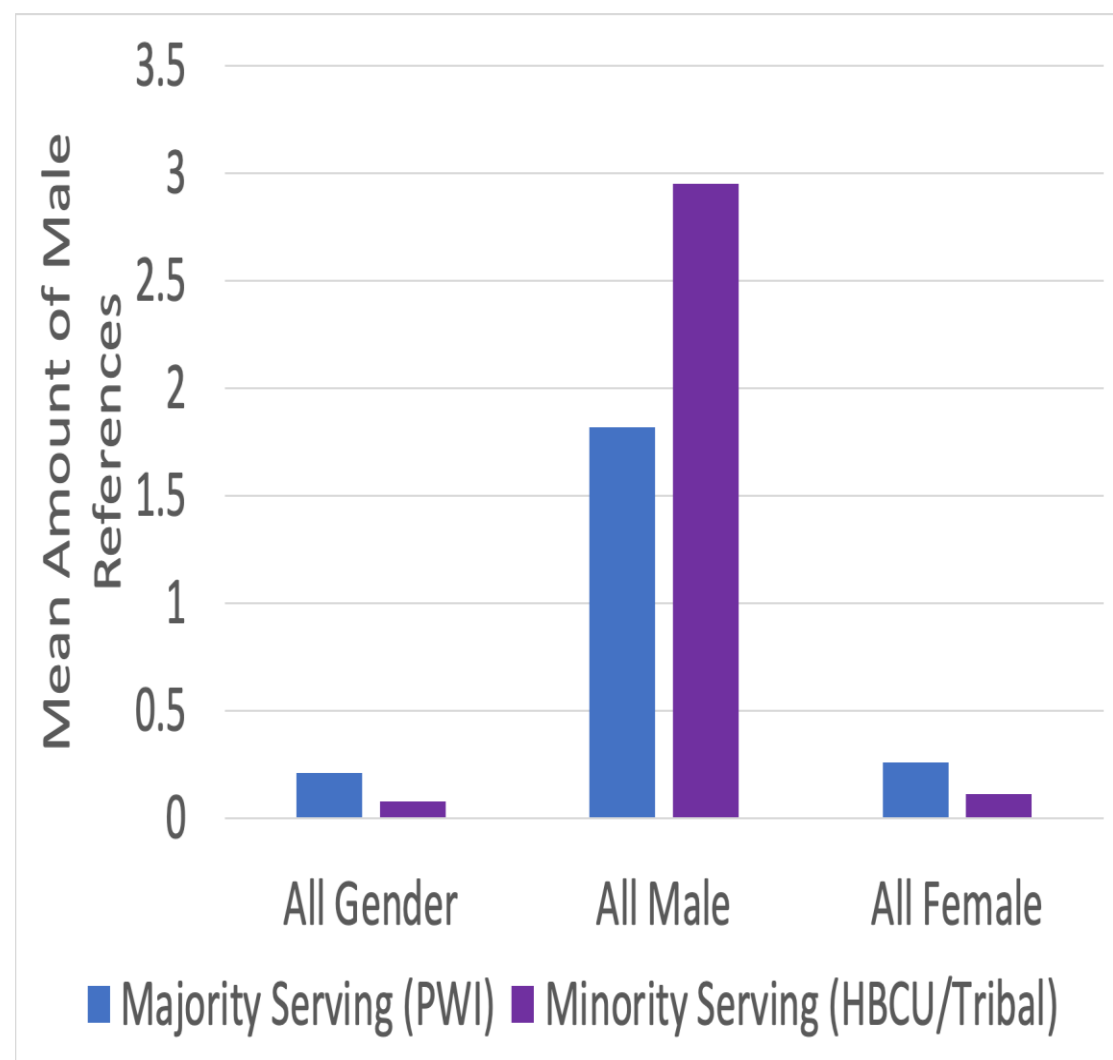

Figure 1: Amount of Female References

Figure 2: Amount of Male References

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