Predicting Genetically Modified Food Opinion Leadership in Undergraduate Students

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Introduction

Students at land-grant universities are the soon-to-be leaders of the agricultural industry and will have to address complex problems facing society (DiBenedetto, Lamm, Lamm, & Myers, 2016). One of the complex issues students will have to address in the future are perceptions of genetically modified (GM) food (Andenoro, Baker, Stedman, & Weeks, 2016). Consumers are skeptical toward the technology (Funk & Raine, 2015) largely due to a lack of transparency from the industry (Mahgoub, 2016). The public is not highly knowledgeable about GM food (Berning & Campbell, 2017), and receives the majority of GM food information from the media (Mahgoub, 2016). Given they are pursuing a higher level of education and may have a higher need for cognition, students at land-grant universities are likely more knowledgeable about GM food than the average consumer (Rumble et al., 2016) and could serve as opinion leaders in the industry regarding the topic. To help students become leaders and solve complex issues facing the public (DiBenedetto et al., 2014), agricultural educators should develop educational opportunities to promote opinion leadership among their students. In accordance with Priority Area 7 of the National Research Agenda (Roberts, Harder, & Brashears, 2016), the purpose of the study was to determine what characteristics predicted GM food opinion leadership among undergraduates at a land-grant institution. The research objectives were to 1) describe University of Florida (UF) undergraduates' GM food opinion leadership, knowledge of GM food, attitude toward GM food, and NFC; and 2) determine if knowledge, attitude, and NFC predict GM food opinion leadership.

Conceptual Framework

The concepts of opinion leadership and need for cognition (NFC) guided this study. Opinion leaders in the agriculture industry are knowledgeable and established within their communities (Lamm, Lamm, & Carter, 2014). Opinion leaders have social influence that encourages certain behaviors (Aral, 2011) and can be used as a valuable public source of information regarding agricultural and natural resources (ANR) topics (Lamm et al., 2014). Bird, Lamm, and Lundy (2017) found GM food opinion leaders enjoyed engaging in discussions when thinking critically about ANR issues. NFC details individuals' tendency and enjoyment in thinking about complex issues (Cacioppo & Petty, 1982). People with lower levels of NFC will actively avoid situations that require a high degree of thoughtfulness (Haugtvedt & Petty, 1992). However, NFC can develop when people have to thoughtfully think about their experiences (Cacioppo & Petty, 1982), and teachers can provide students that opportunity through activities that require critical thinking (Rhoades, Ricketts, & Friedel, 2009). The researchers for this study hypothesized that students with a higher NFC were likely people who were also knowledgeable and serving as opinion leaders.

Methods

The population of interest for this study was undergraduates in the College of Agricultural and Life Sciences at the UF. A convenience sample of 718 students ($N = 718$) was used due to availability and access of undergraduate classes (McMillan & Schumacher, 2010). An online survey was distributed to the students for extra credit, and there were 414 complete and usable responses (58% response rate). Part of a larger research project, this study analyzed four sections of the instrument. GM attitude was measured using a six-item, five-point bipolar semantic differential scale (e.g.. *good/bad* and *beneficial/harmful*; $\alpha = .93$; 1 = *negative adjective*; 5 = *positive adjective*). Knowledge of GM science and technology was measured using a seven-item, five-point Likert-type scale. Knowledge was self-reported (e.g. "*I understand GM science*" and "*I have read about GM science*;" $\alpha = .82$; 1 = *low knowledge*, 5 = *high knowledge*). NFC was

measured using a 18-item, five-point Likert-type scale developed by Cacioppo and Petty (1982) where a higher score indicates a higher NFC (α = .88). Opinion leadership was defined as people who share information about GM science with others and who people seek to find information from on the topic. The construct was measured using a six-item, five-point bipolar semantic differential scale developed by Childers (1986) where a higher score indicates higher levels of opinion leadership (α = .91). The mean for each index was calculated by summating and averaging the items. SPSS was used to analyze the data with simple descriptive statistics and a multiple linear regression model.

Results

Overall, the level of GM food opinion leadership was low with three as a true middle (M = 2.38, SD = 1.00), NFC was neutral (M = 3.37, SD = .57), GM knowledge was moderate (M = 3.97, SD = .59), and attitude toward GM science was neutral (M = 2.67, SD = .99). The regression model was statistically significant with NFC, GM knowledge and attitude accounting for 23.9% of the variance in opinion leadership. GM knowledge and NFC were significant positive predictors.

Table 1

Predicting GM Food Opinion Leadership Using GM Knowledge, NFC, and GM Attitude

Variable	*b*	*p*
Constant	-1.39	.00
GM Knowledge	.68	.00**
NFC	.33	.00**
GM Attitude	-.02	.75

Note. **p < = .01; (F(3,410) = 42.85, p < .01).

Discussion and Recommendations

The respondents had low levels of opinion leadership and neutral NFC, which both need to increase for students to become industry leaders (DiBenedetto et al., 2016) and address complex problems (Andenoro et al., 2016). The respondents' attitude toward GM food was also neutral, but knowledge was high, which reflected prior research and conclusions (Rumble et al., 2016). The regression model was significant, and GM knowledge and NFC were predictors of opinion leadership. This finding supports that opinion leaders are knowledgeable about what they discuss (Lamm et al., 2014). As NFC increased, so did opinion leadership. Respondents who enjoyed thinking critically about issues and solving problems were also and sharing information about GM food. Additionally, GM food attitude was not a predictor of opinion leadership. This finding is promising because the opinion leaders could represent multiple view points and allow consumers to form attitudes based on more than one perspective. Although the findings from this study cannot be generalized to the population due to the sampling methods, the results still provided insight into the development of GM food opinion leadership. Agricultural educators should strive to encourage critical thinking skills of students to help promote NFC (Rhoades et al., 2009; Cacioppo & Petty, 1982) and high levels of opinion leadership. Providing students with science-based information about GM food in the classroom can help facilitate opinion leadership as well. Equipped with accurate information about GM food and the desire to think in-depth about issues, students have the potential to become opinion leaders in their communities and provide peers with information to allow them to make informed decisions. Future studies should use a simple random sample of undergraduate students for generalizable results. Collecting information on respondents' actual knowledge of GM food rather than self-reported knowledge could also yield more accurate data. This study should be replicated with other ANR issues, such as animal welfare, climate change, and water quality (Andenoro et al., 2016).

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