

Professors Call it Cheating, Students Call it Teamwork: Evolving Norms of Academic Integrity in the Transformative Era of Online Education

Jessie L. Krienert
Illinois State University
jlkrien@ilstu.edu

Jeffrey A. Walsh
Illinois State University

Kevin D. Cannon
Southern Illinois University – Edwardsville

Samuel Honan (student)
Illinois State University

Abstract: Implementation of online education pedagogy and practice has expanded rapidly at colleges and universities in recent years, most notably in response to COVID-19. This innovative teaching/learning modality provides benefits to both faculty and students through dynamic teaching/learning content, immense flexibility, and technological investments to support teaching and learning. Academic dishonesty in higher education is a persistent concern emphasized and extensively explored in traditional face-to-face courses, less so in online learning environments. The present work, drawing on a large sample of students and faculty (n=1,640) at a Midwestern university, employs an esurvey and both qualitative and quantitative responses on cheating behavior in the emergent area of online courses/online education. Results expose significant faculty and student disagreement and uncertainty about cheating behaviors in the online environment. Academic integrity is essential to fair and equitable high-quality higher education. The stakes are high to better understand the transformative shifts in academic dishonesty occurring in the online educational environment.

KeyWords: Academic Dishonesty, Online Learning, Technology, Higher Education

Beginning with the advent of the World Wide Web in 1992, education has undergone a seismic multi-decade paradigm shift ushering in a new era of online/distance ed (Harasim, 2000). In light of this paradigm shift, many colleges and universities have been introducing online distance education content in academic programs across campuses for decades now. The rollout of these endeavors had been largely methodical, calculated, and data-driven until 2019. In 2019 these data-driven approaches of the past gave way to an immediate shift to *all* online learning in higher education as an essential response to COVID-19, priority one was educational continuity for students. As online learning has flourished and become all the more entrenched in higher education in recent years, there is now time to reflect on several transformations that have taken place. Many of the transformative changes, as intended and expected, have been beneficial to students, educators, and higher education more broadly (ex. expanded resource availability, technological developments, dynamic educational content, flexibility, teaching/learning innovations, cost-effectiveness). However, the conceptualization and understanding of academic dishonesty by educators and students has also undergone significant

transformation. The rapid adoption of distance education during the pandemic by some institutions has accentuated the disconnect regarding academic dishonesty between educators and students. For definitional context and clarity, distance education, online education, and remote learning are frequently used synonymously and interchangeably throughout the extant literature to characterize education employing technology to enhance teaching and learning where in-person interaction is not present. This may include synchronous or asynchronous instruction.

Academic dishonesty has been an unsavory sidenote at all levels of education with decades of research consistently showing over 50% of students cheat during their college careers (see Stiles, Wong, & LaBeff, 2018). During the Covid-19 era of rapidly expanded online education, it has arguably exploded in scope and scale with seemingly limitless opportunities often difficult, or even impossible, to definitively detect. As Burgason, Sefiha, and Briggs (2019) note, the absence of direct observation in online courses increases temptation and opportunity. The widespread adoption of online remote learning/distance education, with all of its technological enhancements and conveniences towards facilitating community and reimagining the traditional face-to-face classroom experience, has created a novel but impactful academic dishonesty disconnect. Behaviors and actions that would have traditionally been considered unethical in face-to-face courses are now met with uncertainty or even permissible attitudes and acceptance by students and/or faculty in distance education courses. Consequently, traditional understandings of many cheating behaviors are now obtuse, out-of-synch, and muddled in the wake of this newest era of online education. Further, the hasty expansion of online education by some institutions and the rapid adoption by others during Covid-19 exacerbated simmering issues of academic dishonesty in the education enterprise.

Ease and accessibility of cheating resources and technology-enhanced techniques have allowed students to expand their cheating repertoire so broadly that faculty may not even be aware of the newest tech-enhanced cheating aides. Some enhancements remain covert and discreet while others are available in the public marketplace masquerading as study aides or tutoring services, blurring the lines of ethical behavior and academic dishonesty. Corresponding with the increased advancement in scope, scale, and availability of online cheating, new social and ethical behavioral norms emerging specifically for the online classroom have created a confusing definitional landscape for faculty and students alike. Despite extensive empirical literature on academic dishonesty in the traditional classroom, there is a dearth of empirical research exploring student and faculty understanding of appropriate academic integrity-oriented behavior in the online/virtual classroom. Further, the disconnect in this new era extends beyond students and instructors to universities themselves which employ antiquated disciplinary policies lacking differentiation between academic dishonesty in face-to-face classes versus online classes (Jha et al., 2021). The old adage of one-size-fits-all simply does not apply in the new era of higher education today. With online education playing an increasingly significant role in higher education, it is essential to develop a better understanding of the shifts and changes in cheating behavior norms among both students and faculty and better policy to help address the behaviors.

A brief review of the literature

Academic dishonesty is not a new concern in higher education and the motivation remains as consistent today as it did in 1940 when Drake (1941) noted, “cheating...becomes an expedient to achieve some desired goal, and, at the same time, to avoid some of the unpleasant punitive consequences that attend failure” (p. 418). Nearly a century of research has explored the topic and consistent participation rates have been noted for decades (see Stiles et al., 2018). Cheating has become a normative experience as evidenced by Krienert, Walsh, and Cannon (2021), who found nearly three-quarters of their 1,182 mid-size Midwestern public university student sample reported cheating during college. Similarly, an updated version of McCabe’s (1990) survey (International Center for Academic

Integrity, 2020), examining 840 college students over multiple campuses found that more than 60% admitted to cheating in some form. The degree of cheating is alarming, Parks-Leduc, Guay, and Mulligan (2021), in their self-report examination of 331 undergraduate business students from a mid-size public university in the Mid-Atlantic region, found only 10% had not cheated in some capacity while in college.

The move to online learning has created new opportunities for faculty and students, many of whom have no interest or need to re-enter the traditional classroom. The fast-paced paradigm shift has created a new academic landscape, one which now finds online education integral to its success. The shift, still underway, has left faculty and students struggling to contend with new norms of behavior and evolving definitions and understanding of academic dishonesty. As Burgason et al. (2019) prophetically conveyed, students may have less commitment to academic integrity in online classes where there is significantly less embedded educational tradition (e.g., independent work, appropriate usage of materials, citations, etc.) and more fluid undefined rules of engagement. With limited use of proctoring, monitoring, and supervision, cheating in online courses is not only easy but offers less likelihood of experiencing negative consequences, including detection, compared to traditional teaching modalities (Burgason et al., 2019).

For many students, working with others, or referencing books or notes during exams in an online classroom is not the same as in the brick-and-mortar classroom with face-to-face instruction. Definitional ambiguity about acceptable behavior in online classrooms offers increased opportunities for both intentional and unintentional cheating behaviors. For example, Burgason et al. (2019), in their sample of 119 criminal justice majors at a mid-size southeastern university, found 46% of face-to-face students believed using PowerPoint or notes during an online test was not cheating or was trivial compared to 71% of distance learners who felt similarly. Reedy, Pfitzner, Rook, and Ellis (2021) in their 1,921 Australian student self-report examination found that university students were confused about which resources were permissible to use when taking online exams. Rapid advancements in technology mean students may view “knowledge ownership, acquisition, and distribution in radically different terms than in previous generations” (Evering & Moorman, 2012, p. 35). Students may view the internet as a source of public information that can be used without citation and the attribution of credit. Similarly, students may not view collaboration or group engagement as a dishonest or unethical behavior (Peterson, 2019) even when the tasks were traditionally intended to be solo efforts.

Disconnect in online education expectations is found in both faculty and students. Josien, Seeley, Csipak, and Rampal (2015) presented 256 students and 52 faculty members across three campuses ranging from a small faith-based liberal arts college in South Dakota to a large state university in Utah with cheating scenarios and noted significant disconnect across multiple areas. For example, students were more likely than faculty to think it was acceptable to look up answers or work in groups if exams were taken at home. Additionally, they noted faculty uncertainty across multiple cheating scenarios about whether specific behaviors would be considered academic dishonesty. Similarly, Douglas, Poullet, and Chawdhry (2015), in a pre-pandemic study of 457 undergraduate students at two small mid-Atlantic universities, found that approximately 60% of students at both universities believed using external resources during an online exam was unethical. The authors, similar to Peterson’s (2019) recent work, also found more than 25% of study participants did not know utilizing internet sources for an assessment without citation was plagiarism.

Rapid expansion of distance learning in institutions of higher education has opened the door for new and often innovative forms of academic dishonesty. The lack of supervision that is often paired with online education makes it easier for students to access and reference unauthorized resources, collaborate with others, or even contract with others to complete assignments or coursework (Dendir & Maxwell, 2020). Technology has increased opportunities for both individual and group-level cheating. For example, Lancaster and Cotarlan (2021) found students in STEM classes

were using crowdsourcing sites such as Chegg, Course Hero, and Thinkswap as an upgrade to the stereotypical fraternity test files of old. These sites provide resources that can be accessed in real-time while completing assessments including exams. When comparing questions posted in five STEM subjects to a single answer-sharing site, Chegg, requests increased by 196.25% from 2019 to 2020, representing an additional 2,285,398 questions posted to this site alone (Lancaster & Cotarlan, 2021).

Similarly, contract cheating, where students can receive real-time “help” from commercial “tutors” to complete assignments, quizzes, or exams has experienced an increase in both opportunity and diversity of service (Hill, Mason, & Dunn, 2021). Pre-pandemic, Newton (2018), examining 65 prior works, found an increase from a historical average of 3.52% to an average of 15.7% in 2014/2015. Service utilization undoubtedly increased during the Covid-19 shift towards fully online education. Most recently, as reported in the *New York Times*, a professor at Chapman University resorted to suing students in federal court for copyright infringement. Students were accused of uploading exams and quizzes into a commercial peer-to-peer online sharing site facilitating student cheating in the course. Grades in the class were assigned based on a curve unfairly impacting those students who opted not use the uploaded exam and quiz material to cheat (Levenson, 2022).

Further supporting increases in academic dishonesty during online assessments, both Ardid, Gómez-Tejedor, Meseguer-Dueñas, Riera, and Vidaurre (2015), studying students at an international university, and Dendir and Maxwell (2020), studying students at a mid-size public university in U.S., found a significant drop in exam success when more stringent controls were placed on online testing. They noted that students were less successful on proctored exams when compared to non-proctored exams. While faculty may be concerned about integrity in the online classroom, it is difficult to invest the time needed to effectively identify and combat every new cheating technique, and universities have not adequately adapted to the challenge. Poullet (2020), in her self-report survey of 451 faculty members from two small mid-Atlantic universities, found only 6% of faculty implemented exam proctoring and only 21% used a lockdown browser. Similarly, less than 10% of faculty checked online sites like Quizlet or Chegg to see if their exams were available.

As the extant literature reveals, academic dishonesty is prevalent and the shift to online education, despite the obvious advantages, has created a slew of challenges in the area of academic integrity. The present work employs an esurvey, self-report methodology to better understand faculty and student differences in perception of online academic dishonesty behavior across several domains. More specifically, the present research addresses gaps in the literature related to faculty and student perceptual differences in cheating behaviors by comparing faculty and student responses across behaviors. Thus far, much of the extant work has examined face-to-face academic dishonesty, or considerably less frequent, online or distance education academic dishonesty, with few studies bridging the two and contrasting perceptions of traditional cheating behaviors. Further, the research inquiries whether faculty and students have similar views on cheating in an online environment compared to face-to-face environments, to this end, participants were asked whether they considered 28 traditional cheating behaviors, grouped into five domains, as academic dishonesty in online/distance education courses.

Methodology

Students and faculty from a large (approximately 20,000 student), public, 4-year, university in the Midwest, received an anonymous esurvey containing approximately 100 multiple-choice, open-ended, and Likert-scale questions about beliefs and behaviors relating to academic dishonesty in college¹. An

¹ This research was approved by the Institutional Review Board, IRB-2021-319.

initial recruitment email drafted by the researchers was sent through University Technology Services to students. The email contained a description of the study, an informed consent declaration, and a link to the online esurvey. Two reminder emails were sent using the same process approximately five days apart for a total of three solicitations, resulting in 1,640 survey responses². Respondents were incentivized with entry into a raffle for a \$25 gift card for their participation.

To determine whether faculty and students had similar views on cheating in an online environment, participants were asked whether they considered 28 traditional cheating behaviors, when evaluated in the context of face-to-face courses, as academic dishonesty in online/distance education courses. Behaviors were grouped into 5 categories: receiving materials from other students, providing materials to other students, looking up information, plagiarism, and manipulation tactics. Questions ranged from looking up answers online during an exam, to completing homework assignments in collaboration with other students, to taking an online exam as a group with other classmates. The survey concluded by asking participants what they thought could be done to reduce cheating behaviors in online courses. Survey questions measuring cheating behavior perceptions were adapted from Krienert et al. (2021) with additional input from current education literature, educator experiences, and undergraduate student input.

Analysis Plan

The first step of the analysis involved descriptive statistics to measure the frequency and prevalence of several respondent characteristics. Descriptive statistics for the sample combined with a series of Chi-squared tests to identify statistically significant differences by participant role (faculty/student) are located in Table 1. Bivariate analysis, noted in Table 2, involved a series of Chi-squared tests to identify statistically significant differences in cheating perception between faculty and students. Finally, a qualitative analysis of open-ended response categories was conducted to examine what faculty and students felt should be done to curb cheating in online courses.

Results/Findings

The total sample included 1,508 student and 132 faculty respondents at a public university in the Midwest. There was an overrepresentation of women in the sample (71% of students and 60% of faculty, compared to 56% of the student and 56% of the faculty population), which is typical in survey research (Slauson-Blevins & Johnson, 2016). The majority of the respondents (92% of faculty and 76% of students) were Caucasian, which was fairly similar to the overall campus population (75% and 71%). As noted in Table 1, faculty members were significantly more likely (62%) than students (34%) to believe cheating was a problem at the university. Faculty (74%) were also more likely than students (46%) to have witnessed cheating in their courses.

² Response rates were not calculable because the University does not disclose the total number of students receiving campus-based research participation solicitations sent via bulk email through University Technology Services.

Table 1. Sample Demographics.

	Faculty (n = 132)		Student (n = 1508)	
	Number	Percent	Number	Percent
**Gender	50	38.2	398	26.5
Male	78	60.0	1065	71.0
Female	2	1.5	37	2.5
Other				
**Sexual Orientation				
Straight	114	87.0	1161	77.1
Gay	4	3.1	19	1.3
Lesbian	4	3.1	39	2.6
Bisexual	2	1.5	217	14.4
Other	7	5.3	69	4.6
**Race/Ethnicity				
White	121	92.4	1144	76.1
Black	2	1.5	88	5.9
Hispanic	1	0.8	134	8.9
Other	7	5.3	138	9.2
Ever taken/taught an online course?				
No	9	6.8	139	9.2
Yes	123	93.2	1368	90.8
**Do you think cheating is a problem at this University?				
No	47	38.2	893	65.9
Yes	76	61.8	462	34.1
**Have you ever witnessed someone cheating in your class?				
No	33	26.4	738	54.2
Yes	92	73.6	623	45.8

Quantitative Results

Faculty and students were asked about their perceptions of cheating behavior online in six different areas: receiving answers or materials from other students directly, providing answers or materials to other students, looking up answers during an exam or quiz, collaborative efforts, plagiarism, and manipulation tactics.

Receiving Answers or Materials from other Students

Six questions were used to assess whether receiving information (answers, test questions, etc.) from others would be considered cheating. In all six questions, the majority of both student and faculty respondents indicated that the behaviors would be considered cheating in an online course. Significant differences in scale, however, were noted across samples. Students (17.5%) were significantly more likely than faculty (8.3%) to be unsure, or not consider, receiving exam questions/answers from other students to be cheating behavior. Similarly, students (61%) were significantly less likely than faculty (78.2%) to believe that receiving homework answers from other students would be considered

cheating. Finally, faculty (10.8%) were significantly more unsure than students (5.0%) as to whether asking faculty for an extension in order to receive exam questions from another student would be considered cheating.

Providing Answers or Materials to Other Students

Six questions were asked to gauge whether providing answers or materials to other students would be considered cheating in an online course. Although both faculty and students believed all six behaviors were considered cheating, students were significantly less likely than faculty to identify provision behaviors as cheating. Students (22.8%) were significantly more likely than faculty (4.2%) to believe sharing homework answers was not cheating, however, it's important to note that over 40% of faculty were unsure whether this would be considered cheating. Faculty (86.7%) were significantly more likely than students (59.0%) to consider uploading exam questions to a sharing site like Chegg or Quizlet to be cheating. Students were also much more likely (27.7%) to be unsure whether this was cheating behavior compared to faculty (11.7%). Similarly, faculty were significantly more likely than students to believe giving someone exam or quiz questions after having taken an exam or quiz (94.2% compared to 82.3%), or selling a paper to someone (95.0% compared to 86.9%) was cheating behavior.

Looking Up Answers During an Exam or Quiz

Students looking up answers was the category with the most indecision as to whether the behaviors would be considered cheating. Five questions were used and only one showed a significant disconnect. Students (81.4%) were much more likely than faculty (59.2%) to believe looking up answers online during an exam would constitute cheating. Similarly, both faculty (47.9%) and students (51.2%) were unsure as to whether looking at notes, books, or other course materials during an exam would be considered cheating.

Collaborative Efforts

Five questions were used to assess whether working in groups or with others would be considered cheating behavior. Faculty (66.7%) were significantly more likely than students (58.2%) to view taking online quizzes or exams with other people as cheating. Similarly, students (43.8%) were significantly more likely than faculty (29.4%) to believe it was not cheating to complete online homework with other students. Students were also more unsure than faculty as to whether it was permissible to have another person complete their homework (9.5% of students compared to 1.7% of faculty), or even take their online course for them (6.6% of students compared to 0.8% of faculty).

Plagiarism

Two questions were used to assess plagiarism. Over a third of each sample wasn't sure whether using a quote or paraphrase in a paper and not citing it would be considered plagiarism, however, students (26.9%) were significantly more likely than faculty (5.8%) to be unsure whether making up fictitious references or a bibliography would be cheating.

Manipulation Tactics

Finally, four questions examined manipulation tactics that students use to increase their grades. Although there wasn't a significant disconnect between faculty and students, it is important to note that for 3 of the 4 questions, nearly 24% of students and faculty were unsure whether the behavior would be considered cheating.

In sum, while the majority of faculty and students were frequently aligned in their perceptions of cheating behaviors in online/distance education courses, the most interesting findings are in the margins. A minority of students and faculty seemed to have more permissive attitudes towards some behaviors demonstrated by less clarity of agreement that they are cheating behaviors. We speculate these newer attitudes may be the result of two influences. First, in an effort to build community in online classes faculty often encouraged and promote students working together and communicating through various online formats and technologies. Further, technology as a conduit to contact and connection becomes vital in online/distance education courses. The unintended consequence may be that boundaries are blurred with regard to what should be independent work and what may be group work. This may be a sort of desensitizing that is taking place where technology and distance undermine traditional norms of classroom behavior regarding academic dishonesty. A second contributing influence may be exogenous influence of Covid-19 on education. When education was moved online during the pandemic there were calls for instructor leniency at every level of education due to the unique challenges being encountered. Further, instructors were arguably more focused on content delivery than academic dishonesty. Academic rigor was often reduced in the interest of not overburdening students during an already trying time. It may be that some of the leniency during the pandemic led to perceived acceptance and normative change. An integrated approach may offer a more comprehensive explanation. Students are now being encouraged to actively interact with their peers, exchange ideas, leverage online technologies, utilize platforms such as Chegg, and even rely on AI tools that readily provide instant answers. Instructors, in turn, are displaying a greater degree of permissiveness and leniency towards the types of information that can be shared among students. As a consequence, this amalgamation of factors has created a climate of uncertainty, where the boundaries of acceptability in academic practices have become ambiguous and academic dishonesty more confounding.

Table 2. Faculty and student perception of online cheating behaviors (n = 1640).

	Faculty (n = 132)		Student (n = 1508)	
	Number	Percent	Number	Percent
Received Answers/Materials from Others				
Asked other people for answers during an online exam				
Yes	111	92.5	1149	89.3
No	9	7.5	119	9.3
Unsure	0	0.0	18	1.4
*Receiving exam questions/answers from students who have already taken the exam				
Yes	110	91.7	1062	82.5
No	0	0.0	46	3.6
Unsure	10	8.3	179	13.9
**Receiving homework answers from students who have already done the homework.				

Yes	93	78.2	785	61.0
No	2	1.7	174	13.5
Unsure	24	20.2	327	25.4
Buying a paper and turning it in as your own				
Yes	118	98.3	1205	93.8
No	0	0.0	19	1.5
Unsure	2	1.7	61	4.7
*Requesting an extension on an exam in order to receive answers from other classmates.				
Yes	113	95.0	1112	86.7
No	0	0.0	32	2.5
Unsure	139	10.8	6	5.0
Turning in another student's assignment as your own				
Yes	118	99.2	1218	95.0
No	0	0.0	0	0.7
Unsure	1	0.8	55	4.3
Provided answers/materials to others				
Providing answers to another student during an online exam				
Yes	115	95.8	1161	90.2
No	0	0.0	12	0.9
Unsure	5	4.2	114	8.9
**Sharing homework answers with other students				
Yes	66	55.5	525	40.9
No	5	4.2	292	22.8
Unsure	48	40.3	466	36.3
Taking pictures of an exam or quiz and sharing them with other students				
Yes	112	93.3	1166	90.7
No	1	0.8	19	1.5
Unsure	7	5.8	100	7.8
**Uploading exam answers to a sharing site				
Yes	104	86.7	757	59.0
No	2	1.7	170	13.3
Unsure	14	11.7	356	27.7
*Giving someone exam or quiz questions after an exam is finished				
Yes	113	94.2	1054	82.3
No	0	0.0	50	1280
Unsure	7	5.8	176	13.8
*Selling a paper to someone else				
Yes	113	95.0	1115	86.9
No	2	1.7	43	3.4
Unsure	4	3.4	125	9.7
Looked up Answers				
**Looking up answers online during an exam				

Yes	71	59.2	1047	81.4
No	7	5.8	42	3.3
Unsure	42	35.0	198	15.4
Looking at notes, books, or other course materials during an exam				
Yes	45	37.8	368	28.6
No	17	14.3	260	20.2
Unsure	57	47.9	658	51.2
Looking up exam questions/answers from an online sharing site				
Yes	91	75.8	1011	78.6
No	5	4.2	68	5.3
Unsure	24	20.0	207	16.1
Looking up homework answers from an online sharing site				
Yes	69	58.0	645	50.2
No	13	10.9	255	19.9
Unsure	37	31.1	384	29.9
Accessing a shared document to cut and paste answers into an exam or quiz				
Yes	105	87.5	1089	85.0
No	0	0.0	35	2.7
Unsure	15	12.5	157	12.3
*Taking online quizzes or exams with other people				
Yes	80	66.7	747	58.2
No	4	3.3	128	10.0
Unsure	36	30.0	409	31.9
*Completing online homework with other people				
Yes	24	20.2	247	19.2
No	35	29.4	563	43.8
Unsure	60	50.4	475	37.0
Having another person complete your online quiz or exam				
Yes	120	100.0	1225	95.5
No	0	0.0	7	.5
Unsure	0	0.0	51	4.0
*Having another person complete your online homework				
Yes	116	96.7	1133	88.2
No	2	1.7	29	2.3
Unsure	2	1.7	122	9.5
*Having another person take an online class for you				
Yes	119	99.2	1185	92.3
No	0	0.0	14	1.1
Unsure	1	0.8	85	6.6

Plagiarism				
Using a quote or paraphrase in a paper and not citing it				
Yes	69	58.0	751	58.5
No	7	5.9	139	10.8
Unsure	43	36.1	394	30.7
**Making up references or a bibliography				
Yes	110	91.7	853	66.4
No	3	2.5	85	6.6
Unsure	7	5.8	346	26.9
Manipulation				
Providing false excuses to a teacher to gain extra time on a project or assignment				
Yes	77	64.2	690	53.8
No	14	11.7	188	14.7
Unsure	29	24.2	405	31.6
Providing false explanations to teachers for late work				
Yes	70	58.8	653	51.1
No	15	12.6	211	16.5
Unsure	34	28.6	415	32.4
Lying to an instructor to attempt to increase your grade				
Yes	95	79.8	936	72.9
No	6	5.0	70	5.5
Unsure	18	15.1	278	21.7
Seeking an unnecessary medical disability diagnosis in order to receive accommodations for exams, quizzes, or coursework				
Yes	83	69.2	881	68.9
No	9	7.5	87	6.8
Unsure	28	23.3	311	24.3

* $p \leq .05$ ** $p \leq .001$

Qualitative Results

Qualitative responses regarding strategies that faculty members could adopt to reduce cheating in online courses were assessed for both faculty and students. Using Atlas/ti, for thematic coding, the top five themes for each group were identified. While there were considerable similarities in the identified themes between faculty and students, notable variations in their perceived importance emerged within each category.

Faculty

For faculty, the top thematic categories included changing the types/nature of online assessments (48), increasing detection using technology (36), giving in to student demands and allowing students to use resources or work in groups (20), and providing clearer expectations relating to academic dishonesty

(14). The final category included responses indicating there was nothing that could be done to reduce cheating as it was inevitable (11).

Change Assignments

Many faculty believed the way to combat cheating was to change the format, type, or nature of assessments in ways that would make it more difficult for students to cheat (40). Switching to longer or more creative essay-style exams, eliminating exams, and moving towards group projects or papers were the most common suggestions. For example, one faculty member stated, “Not having exams or quizzes, but substitute those for more involved, creative-thinking based projects that require the student to do more than answer memorized questions.” Similarly, another faculty member explained:

Stop giving objective style exams!!!!!! They don't assess anything other than the student's ability to find information. Instead, use project-based activities that require an individualized component. Also, stop expecting students to memorize things. Teach them how to use the information gathering tools and critically examine the evidence to come up with a solution. Bottom line, teachers need to do better in creating authentic assessments.

As one member stated, “create assignments that require students to demonstrate their own knowledge such as projects rather than quizzes or MC exams that are clearly easy to cheat on.” Or as one simply put, “Make creative assignments that make it difficult to cheat.” Some (7), suggested updating or changing exam/assignment content more frequently would be beneficial. As one member stated, “at the very least, exams and written assignments should not be the same every semester.”

Faculty responses complement a trending trajectory in higher education that questions the need for graded assessments. A move to ungraded formative assessments not only curbs cheating behavior, but allows students to make mistakes, utilize retrieval practices and learn (Farland & Childs-Kean, 2021). Highlighting the difference between performance (grade summative assessments) and learning (long term knowledge retention) Farland and Childs-Kean (2021) argue formative assessments create an environment that promotes academic dishonesty. Sometimes termed *authentic exams*, many educators are opting for open-book, open-web assignments and assessments that mirror real world conditions (Killam, Luctkar-Flude, Brune, & Camargo-Plazas, 2022). Authentic exams often encourage collaboration between students as it is an essential on the job skill.

Technology

Many faculty felt increased monitoring through cameras, tracking software, or other proctoring services (21) could reduce cheating in the online environment. As one faculty member stated, “My understanding is that there are technologies out there that will help monitor online exam-taking to reduce cheating. Perhaps universities could invest in these if online education is to continue.” Similarly, another faculty expressed:

Proctor software [should be] mandatory across ALL online courses; not a choice, but ALL online courses must proctor exams; there is complete unstandardized online course delivery and it creates a culture of complacency. During COVID, GPAs soared, classes were watered down and made easier, and cheating was rampant. Our own student body was able to effectively limit proctor software as an invasion of privacy issue - joke. Tail wagging the dog and [our university] complied.

Other faculty mentioned the use of lockdown browsers (5) and shortened time limits (5) as ways to reduce cheating behavior. Extant literature concurs, consistently noting increased cheating in unproctored assessments (Chen, Azad, Fowler, West, & Zilles, 2020; Dendir & Maxwell, 2020). However, the implementation of technological solutions are accompanied by significant financial burden and raise apprehensions regarding student privacy. Moreover, adopted technology solutions may fail to meet accessibility standards (Flaherty, 2020), further exacerbating existing challenges.

Norm Revision

Many faculty felt that cheating in the online world was so inevitable that the only option was to allow students to use resources to look up answers and/or to work in groups. As one faculty described, “Make exams open-note open-book; reduce the importance of exams to the overall evaluation of student performance.” Similarly, another explained, “If the class is online, it is a different animal. You must just assume that now things are open-book and/or collaborative, and adjust things accordingly. Simply put, it is NOT like an in-person class. Accept that, or retire!” Another described this approach as a way to level the playing field between those who cheat and those who do not, “Allow all students to use their notes or text[books] on exams. At least that way, the cheater has less of an advantage over the honest student.”

The shift to emergency remote teaching (ERT) during the Covid-19 pandemic has caused educators to rethink digital learning, changing both implicit and explicit pedagogical strategies. Rapanta, Botturi, Goodyear, Guàrdia, and Koole (2021, p. 729) discuss the need to change the design of both formative and summative assessment, noting a potential shift away from traditional assessment to one that focuses on the learning experience, recognizing the value of ‘transferable and essential skills’.

Clear Expectations

Providing clearer expectations about what is permissible behavior for exams and assessments, as well as having conversations about definitions of academic dishonesty and the consequences of such behavior were also noted. As one faculty explained, “Be clear about course expectations and consequences for academic dishonesty.” Similarly, “If an instructor indicates working together on an exam is acceptable then it's not cheating. If the instructor binds them to the honor code to not seek help from others, then it is. Context matters.”

Nothing Can be Done

Finally, many faculty felt that there was nothing they could do to reduce cheating. As one faculty member described, “I do not think it is possible. Cheating is as old as tests and quizzes and students will always find a way.” Similarly, another explained, “There’s not a lot you can do. In an online setting, the instructor has very little control over the environment in which the testing is taking place.”

Students

Technology was the largest category in student responses for cheating reduction (241). Next, students responded that if professors taught classes better or made them easier, this would reduce the “need” for cheating (148). The third most common thematic code involved changing the definition of cheating to not include using books, notes, the internet, or fellow students when taking exams (138). Changing the types of assignments to make them less conducive to cheating was the next largest set

of responses (133). The final category, similar to faculty members, was that nothing could be done to reduce cheating in the online environment (108).

Technology

Many students mentioned the importance of monitoring, often through the use of Zoom or other camera based methods (161) in combination with the use of a lockdown browser (71). As one student explained:

I would suggest they force students to take the exam in a "lock-out browser" where they do not have access to any aspect of their device other than the tab where the exam is. At the same time, professors could have students join a video conferencing call on another device (preferably a cell phone) with their cameras on in order to ensure that they cannot access the secondary device and that their workspace is monitored as they took the exam.

Similarly, another student explained, "I think it happened less in exams where professors required us to Zoom while taking the exam." Findings mirror past work on student perception. Students commonly indicate they are less likely to cheat if they know they are being watched (See Balash et al., 2021)

Be Better Teachers/Make Classes Easier

Many students felt that student cheating was in response to poor teaching methods by faculty, or a lack of engagement with students on the part of faculty. As one student explained, "Put in more effort in their courses, a lot of cheating happens because students don't want to learn because the course is designed horribly." Similarly, another lamented, "Teach information better so students do not have to turn to cheating." Another described feelings of a lack of relationship, "establish a relationships with the students. kids don't cheat when they respect and connect with the professor. When the prof is an anonymous username, kids don't give a damn." Other students felt that if classes were easier, students wouldn't "need" to cheat. As one student noted:

One thing is to just make the exams a bit easier. Students tend to resort to cheating (in my opinion) when the material is boring or the exams are too hard. Finding some new ways to "spice" up the material or make the exams a bit easier is one potential step to reduce online cheating. I understand this is a very difficult issue to address, but I think that having instructors make the classes less boring at times could discourage online cheating.

The rapid/forced adoption of online learning was difficult for students and faculty. Students echoed concerns raised in prior work about the lack of immediacy in online environments. Long linked to academic dishonesty (See Stearns, 2001), students who feel less of a connection with their instructor report increased cheating behavior. Bialowas and Steimel (2019) suggest the need for increased audio and video in the online classroom to build teacher immediacy and social presence.

Allow Students to Use Aides During Assessment

Students felt that limiting the use of resources on exams wasn't a reflection of the real world and that if they were allowed to use books, notes, and/or the internet during exams, less cheating would occur. As one student explained:

Be open to the idea that we can use our resources in exams because with most jobs, you will be able to use resources and look things up that you don't remember. Going back on your notes to retrieve information is a great skill to have and will probably make more kids want to take notes as well if they know they can use them.

Similarly, another noted:

I think they need to embrace the fact that students will cheat. In the real world, we have access to the internet and our notes whenever we need them. I believe that professors should make all online exams, quizzes, and assignments open note/open internet/open book because each student has equal access to those things.

Change Assignments

Changing assignments to make it more difficult for students to cheat was the most common type of change suggested by students (74) in this category. As one student explained, "Design exam questions that are difficult to cheat on. For example, if they make a multiple-choice test without a time limit, they're practically guaranteeing cheating. If they make a timed essay test, people can still cheat, but it will be much harder, and it will probably have less of an overall impact. Next, using original content (27) and updating assessment material more frequently (22) were common responses. As one student explained, "Maybe don't take a test straight from the internet and actually do their job. If they take one straight from the internet that's on them." Similarly, another noted, "the test questions should not be so easy for the kids to google and find. If they are that is the teacher's fault for being lazy." And similarly, "When you use the same exam for 25 years people are gonna find it all online."

Nothing Can be Done

Many students felt that there was no way to reduce cheating in online courses. As one student described:

There is no way to reduce cheating with online courses, online classes are built for cheaters. That is a huge reason why online courses aren't even comparable to in person classes. Most students most likely cheated quite frequently with their online courses simply because it's way too easy to get away with, it invites cheating.

Similarly, another student stated:

To be honest you can not stop cheating, think like this cheating is going to get worse over a long period of time. There is going to be new software where students can cheat easier. No matter what you try cheating will be everyone, people cheat in their daily lives everyday and you will not know. The smartest kid probably cheat but who knows. Sometimes you have to wish for the best.

Additionally, “Nothing, if people want to cheat they will find new ways. No level of restriction will save them from this fate. It is simply human nature.” And finally, “Nothing. It’s just life. We basically pay for our grades here so if you can help a kid get an A then just let it happen.”

Discussion

Spurred on by a need for COVID-19 education delivery, online courses, if they weren’t already offered, quickly secured a permanent place in many higher education institutions with their increased flexibility, opportunities for innovation, financial resource support, and cost-effectiveness. Importantly, many institutions had been using online education prior to the pandemic but all institutions had to embrace the format during the pandemic. The present work examined the pressing need to better understand academic integrity in the context of online education, specifically, the continuity and disconnect between faculty and students about what behaviors constitute cheating in the latest version of the educational landscape. The salient takeaways of both qualitative and quantitative findings are not the specific areas of agreement between students and faculty, but rather the areas of disagreement and uncertainty that underscore changing norms of academic dishonesty.

One of the largest faculty-student disconnects sets the stage for much of this discussion, over 60% of faculty felt cheating was a problem at the university, compared to less than 35% of students. While starkly contrasted, this makes sense considering students do not perceive as cheating many of the behaviors that faculty do perceive as cheating. Students can’t acknowledge a problem that they don’t perceive as existing. Notably, this student/faculty disconnect continued in four of the five identified categories of cheating behavior. Students were much more likely than faculty to either not consider or be uncertain whether receiving exam questions/responses or homework responses from others was cheating behavior. Similarly, nearly half of the faculty were unsure whether sharing homework answers constituted cheating. Some of the most striking disconnect came when examining contract cheating sites like Chegg or Quizlet. While nearly 90% of faculty felt uploading exam answers to an external sharing site was cheating, less than 60% of students felt it was cheating and nearly 30% of students were unsure whether it would be cheating. Similarly, nearly half of both faculty and students were unsure whether looking at notes, books, or other course materials during an online exam would be cheating. Additionally, while 92% of faculty felt making up references or a bibliography was dishonest, only 66% of students agreed and an additional 30% of students were unsure.

One of the more surprising findings highlighting the uncertainty many faculty have in the new online world was that less than 60% of faculty felt looking up answers during an online exam was cheating and 35% were unsure whether it was cheating. In comparison, over 80% of student respondents felt this would be cheating behavior. Similarly, while more than half of faculty were unsure whether completing online homework with other people would be cheating behavior, nearly half of all student respondents felt this would not be cheating. Results indicate a wide array of confusion across both students and faculty as to how online behavior should be interpreted, and in the place answers should lie – with faculty – there is occasionally the most uncertainty.

The historical understanding of cheating behavior is undergoing a significant transformation. This is not particularly surprising given the paradigm shift underway, however, universities and faculty need to respond in order to ensure academic integrity and the best outcomes for the population they serve – the students. The recent introduction of Artificial Intelligence (AI) in the form of ChatGPT, Microsoft’s Bing, or an array of other AI platforms, serves to further shakeup higher education, possibly more so than any recent technological development in all of education. AI serves to present both new challenges and new opportunities related to teaching, learning, and even academic integrity/dishonesty. Similar to the move towards distance education, faculty have new tools at their disposal to hone, refine, and expand their learning content. Students have a new resource to find

answers to virtually any and every question they might ask with AI results generated in real time. For example, there are already stories circulating about students submitting AI-written term papers and research papers, generating citation lists, feeding in complex math problems with instant solutions, and short essay exam questions generating factual and timely responses. Higher education will need to adapt to this new technology with clarity about behavior that constitutes academic dishonesty and which behaviors are a permissible outgrowth of a new teaching/learning tool. To this end, the following discussion offers several recommendations for consideration about combating academic dishonesty provided by both students and faculty participants in the present study.

Somewhat surprisingly, both faculty and students favored solutions that involved limiting opportunities for cheating, increasing opportunities for detection, and changing definitions of cheating. Neither group included suggestions that would lead to changing the motivation or altering the cultural norms supporting cheating. While categories were similar across faculty and students, there were noted differences in scope and importance. Increasing detection strategies was the top category for students and the second-largest category for faculty. The most common suggestions included the use of proctoring services and lock-down browsers during exams. While such changes would likely have less impact on plagiarism or sharing exam questions, it speaks to the prominence that cheating on exams has over other forms of cheating. Unfortunately, detection and surveillance strategies are not without critique. Increased financial costs and ethical discussions of educational dignity, increased student anxiety, and invasion of privacy have plagued many of the technological advances that could most effectively curb cheating behaviors (Logan, 2021).

Both faculty and students felt changing the nature of exam questions or assessment types could also reduce cheating. For faculty, this was the top response category, whereas it was fourth on the student list. Common examples included format changes to include more short essay or short answer questions instead of a reliance on multiple choice and T/F questions, more frequent updates of exams or assignments, or a move to more individualized or project-based assessments. While such suggestions may curb some cheating behavior, contract cheating services like Chegg can supply answers to short answer or essay questions in real-time, easily accommodating the standard timeframe of a traditional exam (Lancaster & Cotarlan, 2021). Even suggestions of updating content and changing exams more frequently would not impact “toxic tutoring” or contract cheating.

One finding that struck us was the student perception that faculty are obtaining exams from online sites. It is our experience that online sites (ex. Quizlet) are actually facilitating the provision of faculty exams via students to students through peer-to-peer sharing. This student misperception led some to use faculty “laziness” as a justification for cheating. Similarly, some students felt that if exam questions were available and circulating, the faculty were to blame as their content was not updated, or they did not make the effort to have the exam questions removed. Lieneck and Esparza (2018) list a five-step best practice guide to identify course resources posted on external sites. They recommend that each step be done for each sharing site and reference 9 sites in the article. The list is not comprehensive (Chegg isn’t even included). The amount of time and money (some sites require payment to view content) required by faculty to police course content providing sites is daunting. Hill et al. (2021) note, faculty who detect and report online commercial cheating aids are using and losing valuable time that could be spent developing teaching materials, and conversely, faculty who do not detect and report are viewed as naive and lazy.

One potential solution involves action at the institution level. Universities could request that content be deleted, and discipline students who provide content to sharing sites. University honor codes should include policies that specifically address resource-sharing sites. Lieneck and Esparza (2018, p. 5) suggest, at a minimum, honor codes include “reproduced (student memorized exam questions (or entire exams) posted online; online course site screenshots (students using CTRL +

PRINT SCREEN function) to post an internal/online course site quiz or other evaluation questions; and submitted written papers on common course topics for other students to view/access.”

Intellectual Property ownership of class content is another avenue institutions can use to eliminate content from course-sharing sites. Gillis (2019, p. 220) provides an example from the University of Waterloo in Canada, “Posting your Professor’s lecture notes, presentation slides, assignments, exams/quizzes, answer keys, pages or excerpts from textbooks and/or any other material you receive in class or via the learning management system to note sharing web sites including (but not limited to): Book Neto, Course Hero, OneClass (formerly Note Solution)”

Both faculty and students listed changes in the current norms of cheating behavior in their top three responses. Both felt allowing open books, notes, and collaborative efforts instead of labeling the behaviors more traditionally as academic dishonesty could be a potential solution. Obviously, some of the suggestions for change towards best practices are more feasible and practical in some disciplines as opposed to others. Structural changes are likely necessary though much like academic freedom more broadly, implementation will be best determined by departments and the faculty in them.

Two categories differed across groups with faculty identifying the need for clearer expectations and students identifying the need for better and/or easier courses. Clear instructions outlining acceptable behavior in the online classroom is needed for both students and faculty. We can no longer assume that the traditional definitions of cheating apply, and instead, must create clear policies about what is acceptable. The disconnect evident in the qualitative responses highlights the need for better guidance about what is appropriate in online courses. Best practices for online learning highlight immediacy and inclusion strategies, and reducing the anonymity many students feel in the online classroom offer promising avenues to reduce cheating behaviors.

While we believe the strengths of the present work shed new light on academic integrity issues and faculty/student perceptual differences in the online education environment, there are several limitations worth noting. The present work utilized a sample from one university in the Midwest and findings may not be generalizable to the broader field of higher education. More specifically, participation of university faculty in the survey was relatively small and may not represent the experiences of faculty across the study campus or beyond. Further, while we attempted to define the cheating behaviors being studied, there is the possibility that students and/or faculty misconstrued our operational definitions.

As we continue to integrate online education into higher education and reflect on efforts thus far, it is important to take stock of what is working and what needs improvement, especially with new education disruptions on the horizon (ex. AI and ChatGPT). Academic integrity is a pressing issue needing attention in the current environment to ensure students are receiving the highest quality education under the most fair and equitable means faculty can deliver. Evidence presented here suggests both faculty and students need clarity, direction, and support in establishing and refining behavior norms that structure our understanding of academic dishonesty in the new online ed. era.

References

- Ardid, M., Gómez-Tejedor, J. A., Meseguer-Dueñas, J. M., Riera, J., & Vidaurre, A. (2015). Online exams for blended assessment. Study of different application methodologies. *Computers & Education, 81*, 296-303. doi:10.1016/j.compedu.2014.10.010
- Balash, D. G., Kim, D., Shaibekova, D., Fainchtein, R. A., Sherr, M., & Aviv, A. J. (2021). *Examining the examiners: Students' privacy and security perceptions of online proctoring services*. Paper presented at the Seventeenth symposium on usable privacy and security (SOUPS 2021).

- Bialowas, A., & Steimel, S. (2019). Less is more: Use of video to address the problem of teacher immediacy and presence in online courses. *International journal of teaching and learning in higher education*, 31(2), 354-364.
- Burgason, K. A., Sefiha, O., & Briggs, L. (2019). Cheating is in the eye of the beholder: An evolving understanding of academic misconduct. *Innovative Higher Education*, 44(3), 203-218. doi:10.1007/s10755-019-9457-3
- Chen, B., Azad, S., Fowler, M., West, M., & Zilles, C. (2020). *Learning to cheat: Quantifying changes in score advantage of unproctored assessments over time*. Paper presented at the Proceedings of the Seventh ACM Conference on Learning@ Scale.
- Dendir, S., & Maxwell, R. S. (2020). Cheating in online courses: Evidence from online proctoring. *Computers in Human Behavior Reports*, 2, 100033. doi:10.1016/j.chbr.2020.100033
- Douglas, D. M., Poullet, K., & Chawdhry, A. (2015). Student perspectives of cheating in online classes. *Issues in Information Systems*, 16(4). doi:10.48009/4_iis_2015_215-223
- Drake, C. A. (1941). Why students cheat. *The Journal of Higher Education*, 12(8), 418-420. doi:10.1080/00221546.1941.11773211
- Evering, L. C., & Moorman, G. (2012). Rethinking plagiarism in the digital age. *Journal of Adolescent & Adult Literacy*, 56(1), 35-44. doi:10.1002/JAAL.00100
- Farland, M. Z., & Childs-Kean, L. M. (2021). Stop tempting your students to cheat. *Currents in Pharmacy Teaching and Learning*, 13(6), 588-590. doi:10.1016/j.cptl.2021.01.035
- Flaherty, C. (2020). Big proctor: Is the fight against cheating during remote instruction worth enlisting third-party student surveillance platforms? *Inside Higher Ed*, 11.
- Gillis, R. (2019). "Caring about sharing": Copyright and student academic integrity in the university learning management system. In: Association of College and Research Libraries.
- Harasim, L. (2000). Shift happens: Online education as a new paradigm in learning. *The Internet and higher education*, 3(1-2), 41-61.
- Hill, G., Mason, J., & Dunn, A. (2021). Contract cheating: An increasing challenge for global academic community arising from covid-19. *Research and practice in technology enhanced learning*, 16(1), 1-20. doi:10.1186/s41039-021-00166-8
- International Center for Academic Integrity. (2020). Facts and statistics. Retrieved from <https://academicintegrity.org/resources/facts-and-statistics>
- Jha, M., Simon, R. B., Bilgin, A., Sheard, J., Jayarathna, L., Leemans, S. J., & Myers, T. (2021). *Adaptability of academic integrity procedures and practices in the covid-19-accelerated transition to online assessment*. Paper presented at the 38th International Conference on Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education (ASCILITE 2021).
- Josien, L., Seeley, E., Csipak, J., & Rampal, R. (2015). Cheating: Students and faculty's perception on potential cheating activity. *Journal of Legal, Ethical and Regulatory Issues*, 18(2), 21.
- Killam, L. A., Luctkar-Flude, M., Brune, S., & Camargo-Plazas, P. (2022). Redefining cheating on written exams: A shift toward authentic assessment to promote universal design for learning in the context of critical caring pedagogy. *Advances in Nursing Science*, 45(3), E127-E143. doi:10.1097/ANS.0000000000000407
- Krienert, J. L., Walsh, J. A., & Cannon, K. D. (2021). Changes in the tradecraft of cheating: Technological advances in academic dishonesty. *College Teaching*, 1-10. doi:10.1080/87567555.2021.1940813
- Lancaster, T., & Cotarlan, C. (2021). Contract cheating by stem students through a file sharing website: A covid-19 pandemic perspective. *International Journal for Educational Integrity*, 17(1), 1-16. doi:10.1007/s40979-021-00070-0
- Levenson, M. (2022, March 19, 2022). Hoping to identify cheaters, a professor sues his own students. *The New York Times*.
- Lieneck, C., & Esparza, S. (2018). Collaboration or collusion? The new era of commercial online resources for students in the digital age: An opinion piece. *Internet Journal of Allied Health Sciences and Practice*, 16(3), 7. doi:10.46743/1540-580X/2018.1729
- Logan, C. (2021). Toward abolishing online proctoring: Counter-narratives, deep change, and pedagogies of educational dignity. *Journal of Interactive Technology and Pedagogy*, 20.

- Newton, P. M. (2018). *How common is commercial contract cheating in higher education and is it increasing? A systematic review*. Paper presented at the Frontiers in Education.
- Parks-Leduc, L., Guay, R. P., & Mulligan, L. M. (2021). The relationships between personal values, justifications, and academic cheating for business vs. Non-business students. *Journal of Academic Ethics*, 1-21. doi:10.1007/s10805-021-09427-z
- Paullet, K. (2020). Student and faculty perceptions of academic dishonesty in online classes. *Issues in Information Systems*, 21(3), 327-333.
- Peterson, J. (2019). An analysis of academic dishonesty in online classes. *Mid-Western Educational Researcher*, 31(1).
- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2021). Balancing technology, pedagogy and the new normal: Post-pandemic challenges for higher education. *Postdigital Science and Education*, 3(3), 715-742. doi:10.1007/s42438-021-00249-1
- Reedy, A., Pfitzner, D., Rook, L., & Ellis, L. (2021). Responding to the covid-19 emergency: Student and academic staff perceptions of academic integrity in the transition to online exams at three Australian universities. *International Journal for Educational Integrity*, 17(1), 1-32. doi:10.1007/s40979-021-00075-9
- Slauson-Blevins, K., & Johnson, K. M. (2016). Doing gender, doing surveys? Women's gatekeeping and men's non-participation in multi-actor reproductive surveys. *Sociological Inquiry*, 86(3), 427-449. doi:doi.org/10.1111/soin.12122
- Stearns, S. (2001). The student-instructor relationship's effect on academic integrity. *Ethics & Behavior*, 11(3), 275-285.
- Stiles, B. L., Wong, N. C. W., & LaBeff, E. E. (2018). College cheating thirty years later: The role of academic entitlement. *Deviant Behavior*, 39(7), 823-834. doi:10.1080/01639625.2017.1335520