

An Explanation of the Relationship between Instructor Humor and Student Learning: Instructional Humor Processing Theory

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This paper proposes the Instructional Humor Processing Theory (IHPT), a theory that incorporates elements of incongruity-resolution theory, disposition theory, and the elaboration likelihood model (ELM) of persuasion. IHPT is proposed and offered as an explanation for why some types of instructor-generated humor result in increased student learning and others do not. A preliminary study was conducted with 378 students who identified a specific instructor and reported that same instructor's use of inappropriate and appropriate humor, perceptions of instructor humorousness, and affective learning and learning indicators. The Instructional Humor Processing Theory hypothesized that humor related to instructional content would correlate positively with student learning, while inappropriate forms would not. Consistent with IHPT, related humor, an appropriate form of instructional humor, was positively associated with student learning, while other-disparaging and offensive humor, inappropriate forms of humor, did not correlate with student learning. Humorous instructors used significantly more appropriate and inappropriate humor than nonhumorous instructors. Explanations are offered for these findings as well as study limitations and directions for future research to support IHPT.

Keywords: Instructional Humor; Affective Learning; Learning Indicators; Incongruity Resolution Theory; Disposition Theory; Elaboration Likelihood Model of Persuasion

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It is likely that instructors have used humor as long as there have been educational institutions. Research on humor use by instructors has focused on the types of humor used (Bryant, Comisky, Crane, & Zillmann, 1980; Comisky & Zillmann, 1979; Gorham & Christophel, 1990) and the reasons instructors used humor in the classroom (see, for example, Aylor & Opplinger, 2003; Bryant & Zillmann, 1988; Conkell, Imwold, Ratliffe, 1999; Davies & Apter, 1980; Downs, Javidi, & Nussbaum, 1988; Frymier & Wanzer, 1999; Frymier & Weser, 2001; Kaplan & Pascoe, 1977; Sadowski & Gulgoz, 1994; White, 2001). While instructors may use humor for a variety of reasons, many would argue that the most important reason is to enhance learning. Some studies indicate that instructor humor can facilitate learning (Davies & Apter; Kaplan & Pascoe; Wanzer & Frymier, 1999) while other studies do not (Ziv, 1988). The focus of this paper is on understanding the relationship between instructor use of humor and student learning.

Inconsistent findings in humor research are not unusual. Martin, Puhlik-Doris, Larsen, Gray, and Weir (2003) addressed the conflicting research findings related to humor and coping by arguing that not all forms of humorous enactments should result in greater reports of coping and psychological well-being. They noted that when humor is used as a means of relating to others in a prosocial and positive way, it is adaptive; conversely, when humor is used to demean or harm others, it is maladaptive. Importantly, they found that the use of aggressive and self-defeating humor styles, recognized as maladaptive forms of humor, were correlated positively with neuroticism. Use of a self-defeating humor style was positively correlated with depression, anxiety, and hostility, and negatively associated with psychological well-being. On the other hand, the use of adaptive humor styles, such as affiliative and self-enhancing types of humor, was positively correlated with coping and psychological well-being. Similar to Martin et al.'s perspective that the use of different types of humor impact psychological well-being differently, we expect different forms of instructor humor to exhibit varied relationships with student learning.

Extant research indicates that not all forms of instructor-generated humor appear to be appropriate for the classroom (Wanzer & Frymier, 1999). Wanzer, Frymier, Wojtaszczyk, and Smith (2006) investigated students' perceptions of appropriate and inappropriate uses of humor in the classroom and developed a typology of both forms of instructional humor. Building on this work, Frymier, Wanzer, and Wojtaszczyk (2008) explained student variability in perceptions of instructors' use of appropriate and inappropriate humor drawing heavily on theories that explain why certain stimuli are perceived as funny. While this work significantly advanced our understanding of why students perceived certain forms of humor as funny and appropriate in the classroom, it did not explain why humor may or may not facilitate student learning.

Extant research on the relationship between humor and learning is somewhat equivocal (see Bryant, Brown, Silberberg, & Elliot, 1981; Bryant, Comisky, & Zillman, 1979; Coleman, 1992; Kaplan & Pascoe, 1977; Ziv, 1988). Previous research that failed to find support for the humor learning relationship often utilized humorous stimuli that were not verified by receivers as funny (Ziv) and were brief in exposure (Gorham

& Christophel, 1990). If the humorous stimuli used in these studies were not funny or targeted student groups or affiliations, it may have been perceived as inappropriate by study participants. However, just because humor is perceived as appropriate does not necessarily mean that it always increases student learning. Some researchers employ arousal framed explanations to elucidate why humorous stimuli help students recall content (Gorham & Christophel; Ziv, 1979). Gorham and Christophel hypothesized that humor aroused students and gained their attention, resulting in a positive relationship between humor and learning. However, this explanation is incomplete because it does not clarify why humor only occasionally enhances learning; nor does it explain why some forms of humor are perceived as appropriate and some as inappropriate in the classroom.

In the present paper, we attempt to fill in these gaps and provide a more comprehensive explanation for how instructor humor is processed by students and impacts their learning. We draw on elements of incongruity-resolution theory (Berlyne, 1960; LaFave, Haddad, & Maesen, 1996; Suls, 1972), disposition theory (Zillmann & Cantor, 1996), and the elaboration likelihood model of persuasion (Cacioppo & Petty, 1984; Petty & Cacioppo, 1981, 1986) to describe how humorous messages are processed in instructional contexts. In the next sections, we provide an overview of relevant humor theories and apply the ELM to explain how different types of humorous messages are processed by students.

Theoretical Explanations

Three theories seem to explain the central elements of humor: incongruity theory (Berlyne, 1960), arousal relief theory (Berlyne, 1969) and disparagement or superiority theory (Wolff, Smith, & Murray, 1934). These theories offer viable explanations for why individuals find certain types of stimuli funny; however, they do not explicitly address appropriateness, an important criterion that students use to evaluate humorous messages in specific contexts (Wanzer et al., 2006); nor do they explain why humorous message may or may not facilitate learning. Two related theories, incongruity resolution and disposition theory have helped to elucidate the cognitive and affective elements of humor processing. Incongruity resolution, an outgrowth of incongruity theory, explains how humorous messages are cognitively processed, while disposition theory, an outgrowth of superiority theory, addresses affective elements of humorous messages. These theories help explain variability in students' perceptions of humor appropriateness (Frymier et al., 2008) but do not fully explicate why some humorous messages only occasionally lead to learning.

Incongruity-Resolution and Disposition Theory. Derived from Berlyne's (1960) original incongruity theory, incongruity-resolution theory illustrates how humorous messages are cognitively processed by receivers (LaFave et al., 1996). This extended theory depicts humor as a two-phase process where the perceived incongruity or inconsistency in the stimuli must first be recognized and then accurately interpreted by the receiver for the joke or humorous content to be perceived as funny. This theory

begins with the basic assumption that individuals enter social situations with a given set of expectations of appropriate or inappropriate behavior. For humorous messages to be processed and subsequently evaluated as funny, the receiver must identify an occurrence that is inconsistent with his or her expectations for that particular communication context. This incongruity may be perceived as humorous; however, if the incongruity is too absurd or complex for the recipient to comprehend, he or she will not “get” the joke or possibly not even recognize that a joke was intended.

Thus, working from incongruity-resolution theory, the first step in understanding how humor is processed, in an instructional context, involves heightened awareness or recognition of the humorous stimuli in the classroom setting. According to incongruity-resolution theory, it is not enough for the humorous stimuli to be recognized by the recipient; it must also be resolved or interpreted. Hence, when an instructor uses humor in the classroom, there are three possible outcomes. First the incongruity is not recognized; therefore, the students do not perceive any humor. We might say the humor “went over their heads.” A second possible outcome is that incongruity is recognized but not resolved. In this case, the student is likely confused or recognizes that the instructor was trying to make a joke but did not “get it.” Finally, the humorous material may be resolved, make sense to the student, and be perceived as funny.

Disposition theory addresses the significance of the affective element of humorous messages (Zillmann & Cantor, 1996). According to disposition theory, it *does* matter who the “butt” of the joke is and that individuals will describe humor as not funny or as inappropriate when it targets liked others. Disposition theory specifies that the intensity of the affective responses we have to humorous stimuli depends on how we feel about those who are made the “butt” or target of the joke (Zillmann & Cantor). We are more likely to view humor attempts favorably when they target individuals we dislike or when the targets are not recognized as part of our referent group. Conversely, we are less likely to find humor attempts as funny or appropriate when they target individuals we like, such as those included in our reference groups (Cantor & Zillmann, 1973; LaFave, Haddad, & Marshall, 1974; Wicker, Baron, & Willis, 1980; Zillmann & Cantor, 1996). Frymier and her colleagues (2008) argued that students distinguish between appropriate and inappropriate humorous messages based on whether the humor makes sense to them (i.e., the incongruity is understood and resolved) *and* whether the humor target is a liked or familiar other. Disposition theory explains why students label humor attempts that attack individual students, sororities, fraternities, political affiliations, males, or females as inappropriate in the classroom. On the other hand, Frymier and her colleagues noted that humor attempts were labeled highly appropriate when they related to the course content. Working from incongruity resolution theory, related humor was recognizable and made sense to students when enacted in classroom settings. From the disposition theory perspective, related humor was perceived as appropriate because it did not target liked others or in-group members and therefore did not generate negative affect. Therefore, when negative affect is generated by instructor humor, students recognize the message as humor but see it as inappropriate or hurtful.

Elaboration Likelihood Model of Persuasion. ELM (Cacioppo & Petty, 1984; Petty & Cacioppo, 1981, 1986) explains how individuals process persuasive messages and can help elucidate the relationship between humor and learning. Two routes or explanations for persuasion are offered: central and peripheral. When individuals process messages peripherally, they pay attention to cues, heuristics, or truisms instead of message arguments, and as a result, cognitive structures are not changed. On the other hand, when individuals engage in central route processing, they process message arguments and self-generate information related to the message arguments, a process labeled as elaboration (Cacioppo & Petty, 1984; Petty & Cacioppo, 1981, 1986). Central processing is believed to result in cognitive changes in attitudes that in turn influence behavior.

Petty and Cacioppo (1981, 1984, 1986) and others (Claypool, Mackie, Garcia-Marques, McIntosh, & Udall, 2004; Heesacker, 1986; Johnson & Eagly, 1989; Petty, Cacioppo, & Goldman, 1981; Petty & Wegener, 1998) have repeatedly found that individuals are more likely to engage in elaboration when they are motivated to elaborate or think about the message and have the ability to process message argument information. Therefore, in order for students to elaborate on course content, they would need to be both motivated and able to process instructional messages. Petty and Cacioppo (1986) identify topic relevance as influencing people's motivation to process messages. Applying this theory to the instructional context would mean that when students perceive the topic or message as relevant, they should be more motivated to process the information, resulting in greater retention and understanding of the content. Consistent with this thinking, Frymier and Shulman (1995) reported a positive relationship between students' perceptions of content relevance and motivation to study. This relationship was again found by Frymier, Shulman, and Houser (1996) between relevance and motivation. Additionally, Frymier et al. (1996) reported a positive correlation between relevance and learner empowerment and perceived learning. Similarly, Keller (1983) identified relevance as a central component in his motivation model.

Motivation to elaborate on a message has also been linked to incongruent information. Some research (Baker & Petty, 1994; Hastie & Kumar, 1979; Maheswaran & Chaiken, 1991; O'Sullivan & Durso, 1984; Srull, 1981) indicates that incongruent or discrepant information results in increased processing and recall due to increased motivation. People notice this information more readily because it does not correspond with their personal beliefs or common schemata. However, Lee and Schumann (2004) note that incongruent information may be ignored because it does not fit into their existing schemata. Thus, when professors use instructional humor, students may pay more attention because humor, by definition, often involves some types of incongruity that must be resolved. If students engage in increased elaboration of the course content, then it is expected that learning would also increase.

As stated by Petty and Cacioppo (1981, 1986), motivation is not sufficient to engage in central route processing. To engage in high elaboration, individuals must be motivated *and able* to process the message. Petty and Cacioppo identify factors such

as distraction and prior knowledge as variables that influence people's ability to process. Drawing on instructional communication research, gaining students' attention (Kelley & Gorham, 1988), and making content clear (Chesebro, 2003; Chesebro & McCroskey, 2001) have been thought to be central in helping students to retain information. From an ELM perspective, instructional messages that gain students' attention and help them make sense of course content (clarity behaviors) enhance students' ability to process the content resulting in greater retention and learning.

Humor has often been described as an attention gaining strategy (Gorham & Christophel, 1990) as well as a means of generating positive affect. However, humorous messages might also serve as a distraction from the instructional message resulting in reduced ability to process. Therefore instructors' use of humorous messages would be expected to result in greater motivation and ability to process course content to the extent the humorous message potentially gained students' attention, created positive affect, made content relevant, and/or increased the clarity of the content and did not distract students from the instructional message.

Instructional Humor Processing Theory

Both students and professors admit that instructor humor contributes to the classroom environment. Research by Torok, McMorris, and Lin (2004) found that 74% of college students surveyed indicated that they appreciated instructors' use of humor in the classroom as long as it was used constructively. In addition, when asked if the use of such humor assisted in learning, 40% of respondents indicated that humor "often" facilitated learning and 40% reported that humor "always" aided in learning. Drawing on incongruity-resolution theory, disposition theory, and the ELM, we propose Instructional Humor Processing Theory (IHPT) as an explanation for when certain types of instructor humor will affect student learning positively or negatively. Instructional Humor Processing Theory is also advanced to explain variability in student perceptions of the appropriateness of instructor humor. Similar to Martin and colleagues' (2003) humor styles approach, we predict that specific types of instructional humor should facilitate student learning, and other types will not. We utilize IHPT as a framework to understand how humorous messages are cognitively and affectively processed to potentially affect student learning in the classroom context. In the following paragraphs we outline some initial propositions of IHPT.

As discussed earlier, initially students must recognize the incongruity in the instructor's message in order to perceive humor. Once the incongruity has been recognized it must then be resolved or interpreted. If the incongruity is not resolved, the student will not perceive humor and will likely be distracted or confused by the instructor's message. If the student resolves the incongruity, he/she may perceive the message as humorous, and laughter may result. The nature of the humorous message and how it is interpreted determine whether the humor facilitates learning or not. As illustrated in Figure 1, a message perceived as humorous is further evaluated as either positive or negative in affect. Drawing on Frymier et al. (2008) and Wanzer et al.

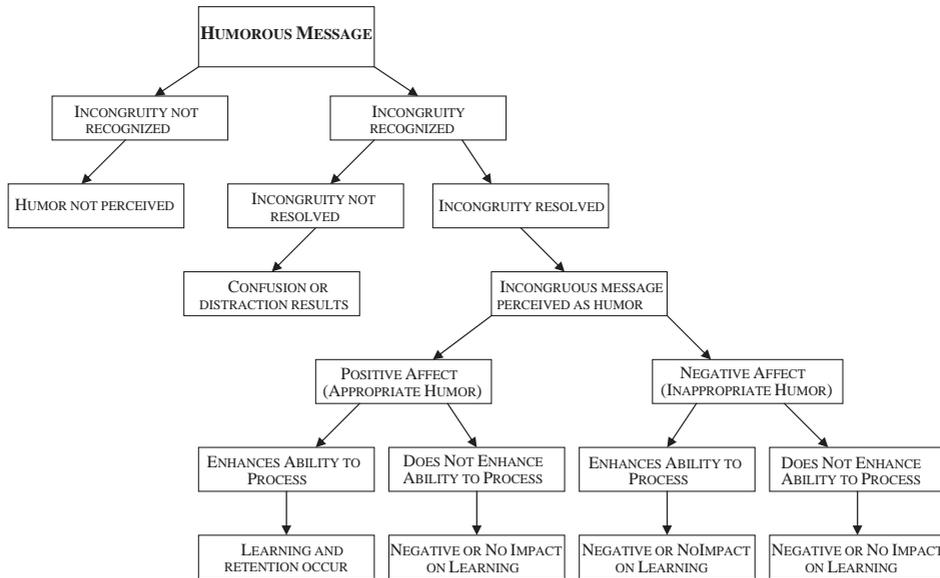


Figure 1. Instructional humor processing theory.

(2006), appropriate forms of humor (i.e., related and unrelated appropriate humor) are expected to create positive affect, while inappropriate forms of humor (e.g., other-disparaging and offensive) are expected to create negative affect. Wanzer et al. identified self-disparaging humor as both an appropriate and inappropriate form of humor; therefore it is not clear under what circumstances self-disparaging humor would create positive vs. negative affect. Drawing on ELM, the positive affect generated by appropriate humor motivates students to engage in elaboration and to process the humorous message. Also drawing on ELM, ability to process in addition to motivation is necessary for elaboration of a message to occur. If the humorous message has elements that enhance students' ability to process such as being related to the course content or makes the content relevant, then students will be more likely to process the instructional message and learning will be enhanced. Disparaging and offensive humor that generates negative affect are likely to reduce motivation, but may also reduce ability by distracting students away from the course content.

Working from the propositions of IHPT, we predict that instructors' use of related humor will be positively associated with learning because this type of humor should enhance both students' motivation and ability to process information. Unrelated humor will likely enhance student motivation to process information because of the positive affect that this type generates. However, it is not entirely clear whether unrelated humor would enhance students' ability to process information because it is not strategically connected to the course material. Additionally IHPT predicts that inappropriate humor types such as offensive and other disparaging humor would be negatively associated with student learning because they would reduce motivation, and possibly ability to process. Offensive and disparaging humor would likely

generate negative affect toward the course material and/or instructor, reducing students' motivation to process. Because self-disparaging humor was identified by students as both an appropriate and inappropriate type of humor (Wanzer et al. 2006), it is uncertain as to how this type would be associated with student learning. Instructor use of self-disparaging humor could reduce status differentials and increase perceptions of closeness, resulting in a positive affective response, and thus increased motivation. Alternatively, instructors' use of self-disparaging humor might reduce credibility and violate the student's expectation that the instructor is knowledgeable and competent, resulting in a negative affective response, and thus decreased student motivation. In an effort to conduct some preliminary testing of the IHPT, we pose the following hypotheses and research questions.

- H1: There will be a significant positive relationship between student perceptions of instructors' use of related humor and student learning.
- RQ1: What relationship will students' perceptions of instructors' use of unrelated humor have with student learning?
- H2: There will be a significant negative relationship between student perceptions of instructors' use of inappropriate humor and student learning.
- RQ2: What relationship will students' perceptions of instructors' use of self-disparaging humor have with student learning?

Individuals differ in the extent to which they appreciate and enact humorous messages (Booth-Butterfield & Booth-Butterfield, 1991; Frymier et al., 2008; Martin et al., 2003; Wanzer & Frymier, 1999). With improvements in measures of humor production (see Booth-Butterfield & Booth-Butterfield, 1991; Martin et al., 2003) researchers can now explore source and receiver differences in humor use and their effects on perceptions of humorous content. For example, Wanzer and Frymier noted that humor-oriented students reported learning more when they were paired with a higher humor oriented instructor than when they were paired with a lower humor-oriented instructor. Similarly, Frymier and colleagues reported that both students' humor orientation and students' perceptions of their instructors' humor orientation were related to perceptions of the appropriateness of various types of instructional humor.

IHPT predicts that instructors' use of humor must result in a positive affective reaction to enhance students' motivation to process. The content of the humorous message is likely a major factor in students' affective response to the humor. However, the instructor's skill in humor delivery is also a meaningful factor in students' response to the humor. We have all heard the same joke delivered by different sources and observed the myriad reactions that ensue. Consistent with the work on humor orientation (hereafter referred to as HO) by Booth-Butterfield and Booth-Butterfield (1991) and Wanzer, Booth-Butterfield, and Booth-Butterfield (1995), funny instructors are expected to exhibit more appropriate *and* inappropriate types of humorous messages than those instructors that were viewed as less funny. Because funny people often exhibit a wide range of humorous messages and behaviors (Booth-Butterfield & Booth-Butterfield) and are often perceived as more effective at delivering humorous

messages, we predicted differences in humor use between the two types of instructors. Hence, the third hypothesis:

- H3: Instructors perceived as humorous will use more appropriate and inappropriate humor types than instructors perceived as nonhumorous.

Method

Participants

Participants in this study were recruited primarily from a midsized Midwestern university ($n = 343$) and secondarily to a small eastern institution ($n = 35$) for a total sample of 378 students. Students were asked to complete an on-line survey. Students at the Midwestern university received credit toward a departmental research requirement. Students enrolled in introductory communication classes (that served majors and nonmajors) who were targeted for recruiting were sent an e-mail soliciting their participation. The e-mail contained a link to a secure online survey where participants read a brief description of the study, were informed of their rights and responsibilities, and gave informed consent. Of the 378 participants, there were 138 males and 240 females. To maximize instructor variability, Plax, Kearney, McCroskey, and Richmond's (1986) methodology was used. Participants were asked to think of the instructor they had immediately preceding the communication class in which they were enrolled, resulting in 207 male and 170 female instructors being reported on (one participant did not report instructor sex) from a variety of disciplines and class types. Institutional Review Board approval was obtained from both participating institutions.

Measures

Instructor Humor Scale. Instructor humor behaviors were measured with the 41 humor behaviors developed by Frymier et al. (2008), which was based on Wanzer et al. (2006) identification of appropriate and inappropriate types of humor. Frymier et al. examined the appropriateness of the 41 instructor humor behaviors and identified five dimensions of humor; other-disparaging (humor that disparages others such as students, political figures, or other instructors), related (humor related to course content), unrelated (humor that is unrelated to course content), offensive (humor that is crude or sexual in nature), and self-disparaging (instructor targets self with humor). In the present study we were interested in the frequency with which instructors used each of the 41 humor behaviors and therefore a Likert-type measure was used anchored by 1 (never) and 5 (very often). In the present study other-disparaging humor had an alpha reliability of .84 ($M = 10.11$, $SD = 2.51$); related humor had an alpha reliability of .86 ($M = 20.06$, $SD = 5.86$); unrelated humor had an alpha reliability of .79 ($M = 5.80$, $SD = 2.35$); offensive humor had an alpha reliability of .68 ($M = 3.82$, $SD = 1.40$); and self-disparaging humor had an alpha reliability of .84 ($M = 6.88$, $SD = 2.71$).

Learning. Participants reported their level of learning using two different scales, the affective learning scale and the learning indicators scale. Learning is a complex, multidimensional construct and cannot be adequately measured with a single scale. Using both scales provides a more comprehensive assessment of learning. Six subscales from Mottet and Richmond's (1998) affective learning scale were used; two measuring affect for the instructor and four measuring affect for the course. Each subscale used four, 7-step bi-polar adjectives to measure learning. Previous reliabilities for the affective learning scale have ranged from .96 to .98 (Gorham, 1988; Mottet & Richmond, 1998). The reliability for the teacher affective learning scale in the present study was .95 ($M = 41.43$, $SD = 11.76$). The reliability for the course affective learning scale was .96 ($M = 76.61$, $SD = 21.42$).

Learning behavior was measured with Frymier and Houser's (1999) Revised Learning Indicators scale. The scale consists of seven items that reflect learning activities that students may engage in when involved in the cognitive learning process, such as "I think about the course content outside of class" and "I see connections between the course content and my career goals." Participants were asked to indicate how frequently they performed each of the behaviors using a 5-point scale anchored with 1 (never) and 5 (very often). Frymier and Houser (1999) reported a reliability of .83. In the present study the learning indicators scale had an alpha reliability of .88 ($M = 22.38$, $SD = 6.00$).

Humorousness. Students' perceptions of the humorousness of their instructors was measured with three 5-point Likert items anchored by strongly disagree and strongly agree that were written for this study. The items were, "This instructor is one of the funniest instructors I know," "This instructor is humorous," and "This is not a funny instructor." Items were submitted to principle components analysis with iteration prior factor extraction. All items loaded on a single factor making rotation impossible. This in conjunction with the high reliability and face validity provided evidence scale validity. In the present study, student perceptions of instructor humorousness had an alpha reliability of .89 ($M = 9.29$, $SD = 3.24$).

Results

Since data were collected from two locations we first compared participants from the two locations on the five types of humor and perception of instructor humorousness to determine if the samples were different from one another in humor use. No significant differences were found between the two groups on student perceptions of instructor humorousness and four of the five types of humor, therefore the two groups of participants were combined for all analyses.¹

The first hypothesis predicted that students' reports of related humor behaviors would be positively associated with learning. Correlations among all variables are displayed in Table 1. Related humor was positively associated with teacher affective learning ($r = .49$, $p < .001$), course affective learning ($r = .45$, $p < .001$), and learning indicators ($r = .39$, $p < .001$). Hypothesis 1 was supported.

Table 1 Correlations Among All Variables

	1	2	3	4	5	6	7	8	9
1. Related Humor	1.0								
2. Unrelated Humor	.30*	1.0							
3. Self-Disparaging Humor	.56*	.48*	1.0						
4. Offensive Humor	.26*	.52*	.42*	1.0					
5. Other Disparaging Humor	.19*	.32*	.31*	.38*	1.0				
6. Humorousness	.74*	.24*	.48*	.23*	.05	1.0			
7. Teacher Affective Learning	.49*	.00	.22*	.02	-.09	.60*	1.0		
8. Course Affective Learning	.45	.01	.24	-.03	-.05	.50*	.68*	1.0	
9. Learning Indicators	.39*	.09	.23*	.08	-.06	.38*	.46*	.70*	1.0

* $p < .01$.

The first research question queried as to whether unrelated humor would be associated with student learning. Unrelated humor was not associated with either teacher or course affective learning ($r = .00$ and $r = .01$ respectively) or learning indicators ($r = .09$). This finding is consistent with the predictions of IHPT because presumably, unrelated humor does not enhance students' ability to process the course content.

The second hypothesis predicted that inappropriate forms of humor would be negatively associated with student learning and was also tested using correlations. Both offensive and other-disparaging humor had nonsignificant correlations with both measures of affective learning and learning indicators (see Table 1). Inappropriate humor does not appear to have a negative impact on learning; therefore, hypothesis two was not supported. However, this result is still consistent with IHPT, which predicts that the negative affect generated by inappropriate humor would reduce motivation to process. Also, there is nothing about offensive and other-disparaging humor that enhances ability to process.

The second research question queried as to how self-disparaging humor would be related to learning. Self-disparaging humor, which emerged as both an appropriate and inappropriate form of humor in Wanzer et al.'s (2006) study was positively associated with teacher affective learning ($r = .22$, $p < .001$), course affective learning ($r = .24$, $p < .001$) and learning indicators ($r = .23$, $p < .001$). Presumably self-disparaging humor enhances motivation to process; however, additional research is needed to better understand how students process this form of teacher humor.

The third hypothesis predicted that instructors perceived to be very humorous by their students would differ in the humor types they used in comparison to instructors perceived as very low in humorousness. Two groups of humorousness were created by identifying instructors scoring one standard deviation above the mean and one standard deviation below the mean of humorousness. There were 79 instructors perceived as low in humorousness and 61 perceived as high. Instructors perceived as

high and low in humorousness were compared in their use of the five types of humor behaviors. Instructors high in humorousness were reported to use significantly more related humor ($t(136) = 22.82, p < .001, d = 3.86$), unrelated humor ($t(103.58) = 5.22, p < .001, d = .91$), self-disparaging humor ($t(101.20) = 9.47, p < .001, d = 1.67$), offensive humor ($t(73.77) = 4.64, p < .001, d = .83$), and other-disparaging humor ($t(114.72) = 2.11, p < .05, d = .37$) than instructors low in humorousness. Using Cohen's (1988) standards, all of these effect sizes, with the exception of other disparaging humor, are considered large. The effect size for other disparaging humor is described as medium. See Table 2 for cell sizes, means, and standard deviations. Hypothesis three was confirmed; instructors perceived as humorous used more appropriate and inappropriate humor than instructors not perceived as humorous.

Discussion

Instructional Humor Processing Theory was advanced to explain how instructors' humorous messages are cognitively and affectively processed in the classroom to affect student retention. Findings from this study provide some preliminary support for IHPT. Additional research is clearly needed to provide support for IHPT and clarify the effects of different types of instructional humor on student learning and retention. IHPT incorporates elements of incongruity-resolution theory, disposition theory, and the ELM to explain how humorous messages are processed in instructional settings.

Instructional Humor Processing Theory proposes that humorous messages must first be cognitively processed by students; instructor humor must be recognized and then resolved by student recipients. In addition, humorous messages are evaluated based on whether they elicit positive or negative affective responses and if they enhance ability to process course content. If humor attempts are recognized and resolved by receivers and elicit positive affective responses, the result is often laughter and smiling. Working from ELM as part of IHPT, we predicted that instructors' use of appropriate types of humor, which generate positive affect, would lead to message elaboration by enhancing motivation to process. IHPT predicted that related humor would be related to learning because it would enhance both motivation and ability to process, and this prediction was supported. Unrelated humor, which is a form of

Table 2 Humor Behavior Means for High and Low Humorous Instructors

	High humorousness		Low humorousness	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Related Humor	26.52 (60)	3.65	13.64 (78)	2.98
Unrelated Humor	6.72 (60)	2.53	4.69 (78)	1.84
Self-Disparaging Humor	8.66 (61)	2.74	4.77 (75)	1.84
Offensive Humor	4.29 (58)	1.50	3.32 (76)	0.66
Other Disparaging Humor	10.43 (58)	2.03	9.72 (74)	1.79

Note. Numbers in parentheses are cell sizes.

appropriate humor (Wanzer et al. 2006) was not correlated with student learning, presumably because it did not enhance student ability to process. However, additional research is necessary to more fully understand how students interpret and process unrelated humor. Instructors' use of inappropriate humor (offensive and other-disparaging humor) presumably elicited negative affective responses and reduced students' motivation and ability to process messages, leading to less chance of message elaboration and decreased retention of information. The second research question focused on self-disparaging humor, which was found to be positively related to both cognitive and affective learning outcomes.

Working from IHPT both related and self-disparaging types of humor were recognized and interpreted by students as funny messages, as evidenced by the positive correlations with humorousness. This is consistent with Wanzer et al.'s (2006) definition of these types of humor as appropriate. Drawing further on the ELM component of IHPT, instructors' use of related humor was associated with learning because it enhanced students' motivation by being relevant and increasing students' ability to process information in clarifying the content. These findings are consistent with previous research on message relevance in instructional contexts (Frymier & Shulman, 1995). Self-disparaging humor was also positively associated with learning. Perhaps self-disparaging humor gained students' attention because it was unexpected and therefore increased students' ability to process instructional messages. Because students do not expect their instructors to use humor, the use of self-disparaging humor may be viewed as even more shocking and unexpected than other types of classroom behaviors. This seemingly positive violation of their expectancies may result in more attention paid to the source's message and ultimately increase students' retention of information. Use of this type of humor may also reduce psychological distance between interlocutors, thus increasing perceptions of immediacy. Additional research is needed to explore the boundaries of appropriate use of self-disparaging humor since it seems likely that too much of it could be harmful to an instructor's credibility.

The second hypothesis predicted that instructors' use of inappropriate humor would be negatively correlated with student learning. This hypothesis was not supported; however, these findings still provide some additional preliminary support for IHPT. Students appeared to recognize and resolve their instructors' use of offensive and other-disparaging types of humor; however, they did not appear to find these forms of humor to be very funny. Other-disparaging humor was unrelated to instructor humorousness ($r = .05$) and offensive humor had a small significant correlation with humorousness ($r = .23$). The lack of a relationship between inappropriate humor and learning may indicate that even if these types of humor are recognized and resolved by students, they do not necessarily lead to increases in students' motivation and/or ability to process information and therefore do not increase message retention. Unlike the related and self-disparaging types of humor, which might positively violate students' expectations of instructor behavior and increase the possibility of message elaboration, instructors' use of inappropriate types of humor may negatively violate students' expectations and simultaneously disrupt

students' ability and motivation to process course information. Use of inappropriate types of instructor humor, such as other-disparaging and offensive humor may evoke negative affective responses from students and result in students feeling less motivated to process information from this instructor. Of course, additional research is needed to explore whether these types of humor negatively affect student recall of information.

The third hypothesis predicted that instructors perceived as humorous differed markedly in their use of classroom humor from those that were less humorous. Drawing on the construct of humor orientation (Booth-Butterfield & Booth-Butterfield, 1991; Wanzer et al., 1995), humorous instructors are more likely to be skilled in executing humorous messages and exhibit a wide range of humorous messages that were recognized and resolved by students. In fact, it was predicted that humorous instructors would exhibit all five appropriate and inappropriate types of classroom humor more often than less humorous instructors. This hypothesis was supported. Professors that were perceived as humorous used significantly more related, unrelated, self-disparaging, other-disparaging, and offensive types of humor than less humorous professors. Consistent with the work on humor orientation by Booth-Butterfield and Booth-Butterfield (1991) and Wanzer et al., funny instructors have a more complex humor schema and will therefore draw from a number of different humorous behaviors when attempting to be funny.

These findings lend some preliminary support for IHPT in terms of how individuals recognize and resolve both appropriate and inappropriate humor types. While IHPT predicts that humor must result in a positive affective reaction to enhance motivation to process the instructional message, both the content of the humorous message and skill of the humor source are factors in students' affective response to the humor. Thus, students in this study distinguished between those instructors who were effective at eliciting humorous responses and those that were less effective. While instructors that were perceived as funny were more likely to elicit humorous responses using both appropriate and inappropriate types of humor, this does not necessarily mean that all types of humor increased student learning. We know from this same data set that only self-disparaging and relevant types of humor were related to increases in student learning, while offensive and other-disparaging types of humor were not related to increases in student learning. Funny professors may be able to get away with using humor that is inappropriate in the classroom because they do so more skillfully or because they have established a healthy "joking relationship" with their students and are therefore able to tease or poke fun at students without repercussions (Apte, 1985).

These findings are consistent with extant research (Frymier et al., 2008) that found a positive correlation between student perceptions of instructor humor orientation and several inappropriate humor behaviors. Frymier and her colleagues found that humor oriented instructors were more likely to tease students, and base their jokes on stereotypes, sexual jokes, and vulgar behavior. Humor-oriented or "funny" instructors may be more skilled at delivering jokes than those who are less humor-oriented (Wanzer, Booth-Butterfield, & Booth-Butterfield, 1995). Drawing on

incongruity-resolution and disposition theory, perhaps high HO instructors are able to communicate the incongruity in such a way that students understand and are not offended by it.

Instructional Humor Processing Theory and the results of this research indicate that being funny is not sufficient for enhancing student learning. Teachers most likely use students' laughter and smiles as feedback on the effectiveness of their humor. Instructional Humor Processing Theory indicates that students' laughter would be a poor predictor of their learning. Students may very well resolve the incongruity and understand the humor, but unless the humor generates positive affect and enhances ability to process, learning would not be enhanced. At this point IHPT promises to advance our understanding of instructors' use of humor; however, we caution the generalization and application of these results. The present research represents only the very initial stages of theory testing.

Limitations and Future Directions for Research

There are several limitations with the present investigation. This study used self-report measures to ascertain information about student perceptions of instructor humor and learning. Students may over or under report the use of instructor humor and may not coincide with instructors' self-reported behaviors. Self-report measures of learning were used that provide a valid, but incomplete measure of student learning. Learning is a complex and difficult construct to measure and future research should use additional measures of learning. These weaknesses are present in all studies that use self-report measures to obtain information from respondents, and should be considered when interpreting these results.

Instructional Humor Processing Theory makes predictions that cannot be fully tested in a correlational design. Therefore, future research should utilize experimental designs to test the predictions made by IHPT and to examine the student retention over time. Perhaps the instructor's use of appropriate classroom humor leads to both immediate and long-term retention of information. It would be interesting to determine whether exposure to relevant humor that is strategically connected to course content results in a sleeper effect where information is retained later as well. In order to provide additional support for IHPT, it is important to create conditions where motivation and ability are positively and negatively affected to determine whether humor does or does not lead to increased learning outcomes. Because the present investigation used correlational data, we can only provide provisional support for IHPT.

We are certainly getting closer to knowing more about the specific types of humorous messages that are most likely to facilitate student learning in classroom settings. This study conducted preliminary testing of a proposed theory that incorporated incongruity-resolution theory, disposition theory, and ELM to explain why certain types of instructional humor may or may not lead to increases in student learning. Findings from this investigation provide some initial support for IHPT's

basic tenets but additional research is certainly warranted to advance this theory further.

Note

- [1] Students from the small eastern institution reported slightly less use of other disparaging humor by their teachers ($M=7.14$, $SD=.43$) than the students at the Midwestern institution ($M=7.57$, $SD=1.92$), $t(227.03)=3.31$, $p<.05$ (equal variances not assumed).

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