



# Understanding anti-plagiarism software adoption: An extended protection motivation theory perspective

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## ABSTRACT

This study investigates factors affecting the adoption of anti-plagiarism software. Using protection motivation theory as a basis, this research examines the influence of threat and coping appraisals, along with social influences, moral obligation, and actual control variables, on the adoption of anti-plagiarism software. A field survey of 218 faculty members working at U.S. public universities reveals that threat appraisals have a stronger influence on the adoption of anti-plagiarism software than do coping appraisals. The faculty members' moral obligation, academic rank, class size, percentage of creative assignments, and gender significantly affect software adoption, whereas social influence does not. Key implications for theory and practice are discussed.

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## 1. Introduction

Despite continuing efforts to educate people that Internet plagiarism is improper behavior, the misuse of the Internet as a tool for research and writing appears to be growing at an overwhelming rate (e.g., [33]). One survey reports that almost 40% of college students admitted to engaging in Internet plagiarism in 2005, up 30% since 1999. The Educational Testing Service also reports that a single “paper mill” Web site averages 80,000 hits per day [8]. This problem likely will become even more rampant as a new generation of students, who largely regard information in cyberspace as public goods and are accustomed to downloading free music, enter college in the near future [34,46].

To cope with the epidemic of Internet plagiarism, many colleges and universities add to their formal honor codes, promote greater awareness programs, enact strong enforcement policies, and install anti-plagiarism software. Of these countermeasures, systematic detection using anti-plagiarism software provides a pertinent and effective method [33]. However, contrary to what might be expected, relatively few faculty members adopt anti-plagiarism software [21]. This study seeks to explain the large gap between faculty members' concern about the use of Internet plagiarism and their minimal adoption of preventative software. Some speculation suggests they might be reluctant to adopt anti-plagiarism software, but rigorous research has yet to identify the facilitators and inhibitors of faculty members' decisions to adopt. Previous studies mainly focus on

students' motivation to commit Internet plagiarism, not on faculty's role in fighting and educating students about the topic [7]. In addition, previous researchers (e.g., [37]) treat protective systems (e.g., anti-virus software, wireless security) as similar to productivity-enhancing technologies (e.g., spreadsheets, e-mail) and use generic IT adoption theories to address their adoption.

Adopting instead the stance that Internet plagiarism is a major threat to academic integrity, this study applies the protection motivation theory (PMT) [54] from health psychology and extends it to investigate factors that may affect the decision to adopt anti-plagiarism software. On the basis of a theoretical postulation of PMT, this study posits that faculty members will be more inclined to adopt anti-plagiarism software when they (1) perceive Internet plagiarism as a serious threat to upholding the standards of academic integrity, (2) are convinced that the software is an effective means of detecting and deterring the use of Internet plagiarism, and (3) believe they possess the capability to use the software.

This study also attempts to extend the original PMT in several ways. First, it examines the nomological network (i.e. the inter-relationships among and between research variables) that has been ignored in previous PMT studies and includes actual control variables that may significantly affect the adoption of anti-plagiarism software. This study examines the direct relationship between coping appraisals and the actual adoption of the software, as predicted in studies that rely on other theories, such as the theory of planned behavior [1] and the technology acceptance model [66], but not in previous PMT studies. Second, this study explores the effect of behavioral control variables, including academic rank, class size, percentage of essay-style assignments, gender, number of teaching assistants, years of employment, and teaching load, on the software adoption. Third, it

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examines the effect of moral obligation [37] and social influence [69] on faculty acceptance of anti-plagiarism software.

## 2. Research background

### 2.1. Internet plagiarism

Plagiarism, defined as “the literary theft, stealing (by copying) the words or ideas of someone else and passing them off as one’s own without crediting the source” [48, p.472], is not a new phenomenon in academia. For decades, studies have reported increasing trends of student plagiarism [11,35], though the issue prompted renewed attention as the Internet, an efficient and effective tool for research and writing, grew in popularity among students, which intensified the problem [24]. The temptation to visit online sites and cut and paste from them, without proper citations, or to purchase prewritten papers from paper mills is growing, driven by (1) the ease of accessing the vast resource base of the Internet to plagiarize; (2) the widespread belief that resources on the Internet are public goods; (3) the perception of low chances of being detected and penalized, often because of a lack of educator interest; (4) the benefits of plagiarizing, particularly for students who have overtaxed, high-pressure lives; and (5) the popularity of large classes and online education, which eliminate most face-to-face contact between students and faculty [30]. Studies further report that though 89% of students recognize Internet plagiarism as wrong, almost one-quarter of them admit to committing Internet plagiarism [60]. In addition, 52% of high school juniors admitted to engaging in Internet plagiarism, which implies the problem may become more extensive when students enter college. To counteract this undesirable phenomenon, educators and researchers have devised proactive solutions, including the use of honor codes, institutional sanctions, instructions, expectation management, and anti-plagiarism software [22,60].

### 2.2. Anti-plagiarism software

One proactive countermeasure to cope with Internet plagiarism is anti-plagiarism software, which can help faculty detect, deter, and educate students about such plagiarism [33,60]. The software quickly detects plagiarism by trawling the Web and its own database, then matching text within students’ assignments to text stored in the database, including Web documents; online publications of books, magazines, academic journals; and student papers that other faculty previously have submitted to check for plagiarism [22]. Detecting plagiarism using these automated tools is necessary, because instructors cannot keep current with every new source of information in specific detail [51]. In addition, the software can help deter students’ plagiarism, because faculty can warn students of the effectiveness of the anti-plagiarism software [6]. Furthermore, it highlights plagiarized words, sentences, or sections, so the software provides an educational tool to instruct students about their incorrect usage of plagiarized words, phrases, and sections and help them learn to cite their sources properly [4,39].

The effectiveness of anti-plagiarism software has received wide support [32,60]. Jacoy and DiBiase [33] indicate that in their study, anti-plagiarism software detected a 13% plagiarism rate for assignments in an online geography course, whereas manual methods only detected a 3% rate for the same assignments. Weinstein and Dobkin [67] find a similarly significant effect: 17.5% of students who received warnings that their papers would be checked using the software engaged in plagiarism, whereas 28% of those who received no such warning did so. The various types of anti-plagiarism software, including Turnitin.com, Glatt Plagiarism Services, WCopyFind, IntegriGuard, WordCheck, and EVE2, function mainly in academia and publishing industries as efficient means to combat Internet plagiarism.

### 2.3. Protection motivation theory

Protection motivation theory [53,54] offers a viable theoretical framework in health and social psychology that provides an important socio-cognitive account of diverse protective behavior. As an expectancy-value theory, PMT postulates that protection motivation arises from cognitive appraisals of a threatening event as serious and likely to occur, together with the belief that a recommended coping response can prevent the event. The threat appraisal thus depends on perceptions of the severity of the expected threat and potential vulnerability to it. The likelihood of an adaptive response increases when people’s perceptions of severity and vulnerability are high. Coping appraisal relates to an evaluation of one’s ability to cope with and avoid the threatening behavior, that is, the person’s individual assessment of the effectiveness of the proposed adaptive behavior to avert the threat (i.e., response efficacy) and his or her perceived ability to conduct that advocated behavior (i.e., self-efficacy). The likelihood of enacting an adaptive behavior increases with higher predicted levels of these efficacy variables. Moreover, the likelihood of enacting an adaptive behavior decreases when high response costs associated with performing the adaptive behavior appear likely. Examples of such perceived costs include inconvenience, expensiveness, unpleasantness, difficulty, complexity, side effects, disruption of daily life, and the ability to overcome habit strength [18]. In summary, both threat and coping appraisal variables affect a person’s protective motivation, resulting in applicable adaptive responses [19]. Previous meta-analyses confirm that all threat- and coping-appraisal components of the PMT significantly contribute to the prediction and understanding of protective behaviors [18].

The PMT also has received validation for a diverse array of behaviors, including various health threats [43], preventive behaviors [56], safer-sex behaviors [62], environmental hazards [64], and adherence to medical treatment regimens [42]. Recent applications extend to the IS field, addressing especially the adoption of systems such as home wireless security [69], anti-malware software [38] and healthcare technology [9].

## 3. Research hypotheses

This study adopts the protection motivation theory and develops a theoretical model to address the adoption of anti-plagiarism software by faculty members (see Fig. 1). The major assumptions of the theoretical model therefore indicate that (1) the intention to adopt anti-plagiarism software is a positive linear function of four factors: (a) severity of the threat, (b) vulnerability to the threat, (c) response efficacy, and (d) self-efficacy; and (2) intention is a negative linear function of the response cost.

This study extends the theoretical boundary of the PMT by investigating the influences of social influence and moral obligation on adoption intention, as well as examining the relationship among coping appraisal variables, actual control variables, and actual software adoption.

### 3.1. Protection motivation variables

#### 3.1.1. Severity of the threat

Severity refers to “the degree of physical harm, psychological harm, social threats, economic harm, dangers to others rather than oneself, and even threats to other species” ([55], p. 115). The more seriously a person perceives the magnitude of the consequences resulting from continuing maladaptive actions, the more he or she should adopt recommended adaptive actions. Previous studies find that the severity of the threat exerts a significant effect on intentions to stop smoking [50,53], conserve energy [26], and adopt security countermeasures [71] and behaviors [47].

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