Eric Kyper and Roger Blake:

Understanding the role of ethics in the intention to share files using P2P networks

Abstract:

This research examines the role that ethics plays in an individual's intention to engage in peer-to-peer (P2P) file sharing. Previous studies have focused on P2P file sharing as primarily an act of piracy; and accordingly many, although not all, have found that ethical considerations do play a role in file sharing intentions. While piracy over P2P networks has continued and ethical predispositions clearly remain important issues, in the face of new business models and increased use of P2P file sharing for perfectly legitimate applications, the percentage of pirated files has decreased even as overall P2P network traffic has grown.

It is therefore important to understand a user's intentions to engage in P2P file sharing as a whole, without restricting that understanding to the single aspect of piracy. But because piracy is still a factor, it is critical to consider the role of ethics in those intentions. The objectives of this research are to propose and test a model of file sharing intentions based on the theory of planned behavior which considers ethical predisposition. Structural equation modeling is used to analyze our model. The results show that while ethical predisposition does not have a significant effect on intentions, other factors do. From this we draw several important conclusions regarding P2P file sharing. These are findings that have significance for network managers and internet service providers, both of who are greatly concerned about the impact of this mode of file sharing. This work is the first of its kind to provide a macro level understanding of the role ethics plays in file sharing in general, not restricted to illicit activities.

Agenda:

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Introduction

Research has investigated ethics with respect to an individual's intention to pirate copyrighted material using peer-to-peer (P2P) file sharing technology in prior work. However, to date few studies have investigated P2P file sharing outside of piracy (see Shen et al., 2010, Grodzinsky and Tavani, 2005). This has become more important as industry analysis has shown that legitimate file sharing has increased and the percentage of P2P files that are pirated has decreased (Multimedia Intelligence, 2008). The goal of this research is to explore the role of ethics in P2P file sharing (hereafter referred to simply as file sharing).

To do so we propose and test a model incorporating an index of ethical predisposition incorporated in the theory of planned behavior (TPB) (Ajzen, 1991); this theory has often been used in studies of user intentions with respect to technology (Venkatesh and Morris, 2003). The TPB guides our study by allowing us to measure behavioral intentions towards peer-to-peer file sharing while including both internal and external factors that can affect these intentions. The ethical index we use is one that has been previously validated in behavioral models of file sharing intentions (Gopal et al., 2004).

A study of the role ethics plays in an individual's file sharing is timely in light of the tremendous amount of Internet traffic now attributed to P2P file sharing and the keen concern of network managers on campuses and in corporations. Universities struggle with the potential legal liability associated with piracy, even if they passively allow it to take place on their networks (Gelpi, 2009).

In industry, beyond the obvious concerns of copyright holders such as the Recording Industry Association of America (RIAA), Internet service providers (ISPs) are greatly affected. For example, in 2008 the Federal Communications Commission issued an order against Comcast, one of the largest ISPs in the U.S. and directed this ISP to stop blocking or otherwise limiting the bandwidth of P2P traffic, in accordance with the FCC's Internet Policy Statement (FCC-08-183, 2008). Comcast first vigorously denied the allegations that they had been throttling P2P traffic, but later agreed to comply with the order while filing a suit to overturn it. In 2010 their suit was successful, and whether or not Comcast has resumed the practice against P2P traffic is unclear: in the same year of that ruling the company indicated it was not blocking P2P traffic but instead had a policy by which they would terminate accounts with "excessive use" (Comcast, 2010). In the meantime, a class action suit was filed against Comcast for blocking P2P traffic, a suit that settled with an award of $16 for each of Comcast's customers (US-District.Court, 2010).

Clearly, P2P file sharing is an important issue today. A greater understanding of an individual's intention to file share is necessary before we create meaningful policies to encourage legitimate uses, curb illicit use, and design better network traffic management standards; the purpose of this paper is to contribute towards that understanding.

The remainder of this paper first discusses prior research of P2P file sharing intentions with a focus on ethical considerations, and then the theory of planned behavior. Next the hypotheses are presented followed by the methodology, analysis, and a discussion of the results. To clarify, for the purposes of this study file sharing is defined as the use of file sharing software for the purposes of either downloading or uploading content.

Background

While their conclusions and methods have varied, researchers have generally found that ethical considerations have some effect on a user's intention to share files. For example, Chiou, Huang, and Lee (2005) included ethical decision-making within the construct termed "perceived social consensus" and focused on music piracy in Taiwan. These authors found that if the content holder, e.g. a record company or website such as Apple's iTunes, is perceived to be behaving fairly, then illegal downloading is not acceptable. But they also found that if an individual believes the content holder has behaved improperly then there is a justification for illegal downloading, calling into question the role of ethics in file sharing.

Gopal and Sanders (1998) determined that ethical predispositions had a significant relationship with software piracy in both the U.S. and India. Gopal, Sanders, Bhattacharjee, Agrawal, and Wagner (2004) applied a similar model focused on music piracy, and again found that the ethical predispositions index they studied was significantly related to piracy intentions. Their study concluded that more ethically inclined individuals were likely to download less. The study also found that other factors such as deterrence, legal actions, and education are not likely to be effective in reducing music piracy.

LaRose and Kim (2007) looked at moral justification as an antecedent to deficient self regulation and the intention to download music files, finding a significant relationship. They found that the belief structure of subjective norms, one of three such structures in the theory of planned behavior, was not related to intentions. Our research finds some contrasting results adding valuable contributions to the current literature.

In another study involving the role of ethics, Freestone and Mitchell (2004) found that when compared to a group of five activities downloading music or movies was viewed as the least wrong. Respondents may agree that illegal downloading is wrong, but that it is a lesser wrongdoing when compared to acts such as "using stolen credit cards" or "gaining unauthorized access to systems". In a similar vein, Altschuller and Benbunan-Fich (2009) used content analysis to conclude that half their respondents regard downloading as unacceptable, but that the majority of respondents condone others engaging in downloading.

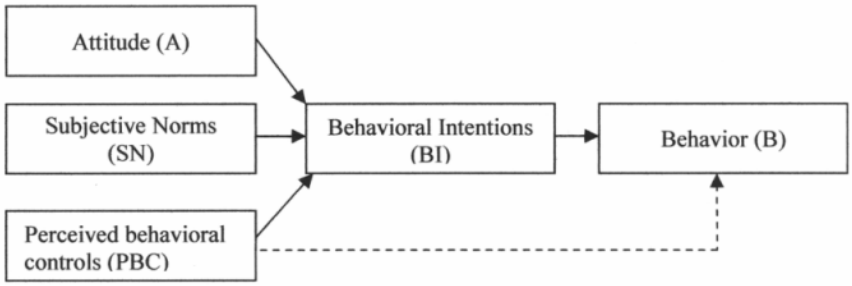
Finally, research has been inconclusive as to whether ethics are antecedents of either attitude or of behavioral intention, in studies related to file sharing more generally to P2P file sharing in particular. Lysonski & Durvasula (2008) found that ethical orientation was related to an awareness of the social costs and consequences of piracy, and found a general consensus that downloading is not morally wrong. However, they did not find a relationship between ethical orientation and attitude towards pirating MP3 files. They concluded that stressing the unethical aspects of downloading music illegally is unlikely to be an effective deterrent.

An important contribution of our study is that we are focusing on the possible role ethics has on an individual's intention to engage in file sharing regardless of the legality of the actions. The research reviewed shows the range of conclusions reached about ethics and the effects it has on file sharing intentions. However, in all of these studies ethics is only considered in legal situations. There is precedent to study file sharing at the macro level providing an understanding of individual intentions not bounded by legal specifics (see Blake and Kyper, 2011). Given the different results these studies have found for ethical considerations and the changing landscape of P2P file sharing more research needs to be done to clarify the role of ethics. Our study adopts the ethical predisposition index used by Gopal and Sanders in studies of both software and music piracy (Gopal et al., 2004, Gopal and Sanders, 1998), an index also used by d'Astous, Colbert, and Montpetit (2005) as an antecedent of attitude in the context of music piracy. Before discussing this index and how ethics was incorporated in that model, we discuss the theory of planned behavior next.

The Theory of Planned Behavior

Our research model is based on Azjen's theory of planned behavior (Ajzen, 1991, Ajzen, 1985). There are three belief structures with the direction of predictors posited by this theory shown in Figure 1.

Figure 1: The Theory of Planned Behavior (TPB)



The TPB states that a measurement of behavior (B) will be a weighted function of behavioral intention (BI) and perceived behavioral control (PBC) as:

$$B = w_1 BI + w_2 PBC$$

In turn, behavioral intention is a weighted function of the following monolithic belief structures: attitude (A), subjective norms (SN), and perceived behavioral control (PBC). If all individual internal and external factors are known, then this model is accurate within the limit of measurement error (Ajzen, 1991).

$$BI = w_3 A + w_4 SN + w_5 PBC$$

Each monolithic belief structure is a predictor of behavioral intention; each of A, SN, and PBC has a separate formulation as shown in the following equation:

$$A = \sum(b_i)(e_i)$$

$$SN = \sum(nb_j)(mc_j)$$

$$PBC = \sum(cb_k)(pf_k)$$

Attitude (A) is the sum of the products of attitudinal belief (b_i) and desirability of that outcome (e_i). In this study we are measuring attitude towards using file-sharing software. This concept is represented by perceived usefulness and perceived ease of use as originally developed by Davis, Bagozzi, and Warshaw (1989). We include these constructs because they have been integral parts of every TAM study, and similar studies have found them significant in predicting behavioral intentions (Davis, 1993, Mathieson, 1991).

Subjective norms (SN) are the sum of the products of an individual's normative beliefs (nb_j) regarding a particular referent, and the motivation to comply with that referent (mc_j). Subjective norms are a function of both peer and superior influences. This allows us to measure the external pressure an individual feels to use file sharing software and the internal pressure to comply with those externalities.

The role of subjective norms in technology research is ambiguous. Initially Davis et al. (1989) did not find the concept significant. However, since that time other researchers have found subjective norms significant in theory of planned behavior models (Taylor and Todd, 1995). We include subjective norms because an individual could perceive their actions to have negative consequences.

Perceived behavioral control (PBC) is the sum of the products of control beliefs (cb_k) and perceived facilitation (pf_k) of the control belief. For example, if an individual may perceive a certain proficiency level is required to use a file sharing software package, and that proficiency is important in determining the usage behavior. We know from Ajzen (1991) that when an individual has complete control over behavioral performance, intentions alone should be a sufficient predictor. However, the fact that many individuals don't have

such complete control is readily apparent. For example, most users have no control over the speed of their network or the files that may be available to share at any particular point in time. ISPs have recently blocked or increased the response time of peer-to-peer networks (Andersen, 2008). In such cases an individual may have the intention to file share but lack access to the technology. Perceived behavioral control is an essential component of our study, and an important reason to choose the theory of planned behavior.

The Decomposed Theory of Planned Behavior

In more recent years most studies have analyzed the decomposed version of the theory of planned behavior. In this version monolithic belief structures are decomposed into multi-dimensional belief constructs as shown in Figure 2. Several advantages are noted for this approach. First, Bagozzi (1981) and later Shimp and Kavas (1984) pointed out that it is unlikely that monolithic belief structures will consistently relate to the antecedents of intention. Decomposition allows the role of each structure to be more clearly understood. Second, decomposition overcomes some operationalization disadvantages pointed out by Mathieson (1991) and Berger (1993).

Our factors relating to attitude in our decomposed model are based on the technology acceptance model (TAM), first introduced by Davis et al. (1989) TAM is frequently used in studies of behavioral intentions, such as used in Yang, Hsu, and Tan's study of an individual's motivation to use YouTube (Yang et al., 2007). Decomposed models are also often used as factors in the constructs of subjective norms and perceived behavioral controls, such as in models of the intentions to use computer labs by Taylor and Todd (1995). and the intentions to download music over P2P networks by LaRose and Kim (2007). Decomposed models use specific factors for each of the TPB constructs, meaning the model translates readily to practice and is more managerially relevant. This last point is of particular interest to our research because we would ideally like to provide recommendations for deterrent and network management policies.

Hypotheses

For the purposes of this study file sharing is defined as the use of file sharing software for the purposes of either downloading and/or uploading content.

Based on the above theoretical background we pose ten hypotheses to answer our research questions. The three main hypotheses represent the monolithic belief structures in the theory of planned behavior (attitude, subjective norms, and perceived behavior controls). *H1 – H3* each has related sub-hypotheses corresponding to the decomposed version of our model. Attitude is comprised of ethical intention, perceived ease of use, and perceived usefulness. Subjective norms are comprised of peer influences and superior influences. A perceived behavioral control is comprised of self-efficacy and technology facilitating conditions.

The theory of planned behavior states the more favorable an individual's assessment of a behavior, the greater peer pressure they feel, and the greater their perceived behavioral control over a behavior the greater should be their intention to perform the behavior. Of course we expect the relative importance of each determinant of intention to change depending on the specific behavior in question. Note that in figure 1 above perceived behavioral control influences both intention and behavior directly. According to the theory of planned behavior people's behavior is strongly influenced by their confidence in their ability to perform the behavior (perceived behavioral control). The reasons for this are as follows: first, assuming constant intention, effort expended to perform a behavior will increase with increases in perceived behavioral control. Second, perceived behavioral control can be used as a proxy for actual control (assuming the individual's perceptions of control are accurate).

Our hypotheses stated in the null are defined here and summarized in Figure 2:

H1: An individual's attitude towards sharing files over peer-to-peer file-sharing has no impact on their intention to share files over peer-to-peer networks.

H1a: Ethical predisposition has no impact on an individual's attitude towards sharing files over peer-to-peer networks.

H1b: The perceived ease of use of peer-to-peer file-sharing has no impact on an individual's attitude towards sharing files over peer-to-peer networks.

H1c: The perceived usefulness of peer-to-peer file-sharing has no impact on an individual's attitude towards sharing files over peer-to-peer networks.

H2: An individual's subjective norms for peer-to-peer file-sharing have no impact on their intention to share files over peer-to-peer networks.

H2a: An individual's [social] peer influences on peer-to-peer file-sharing have no impact on their subjective norms for sharing files over peer-to-peer networks.

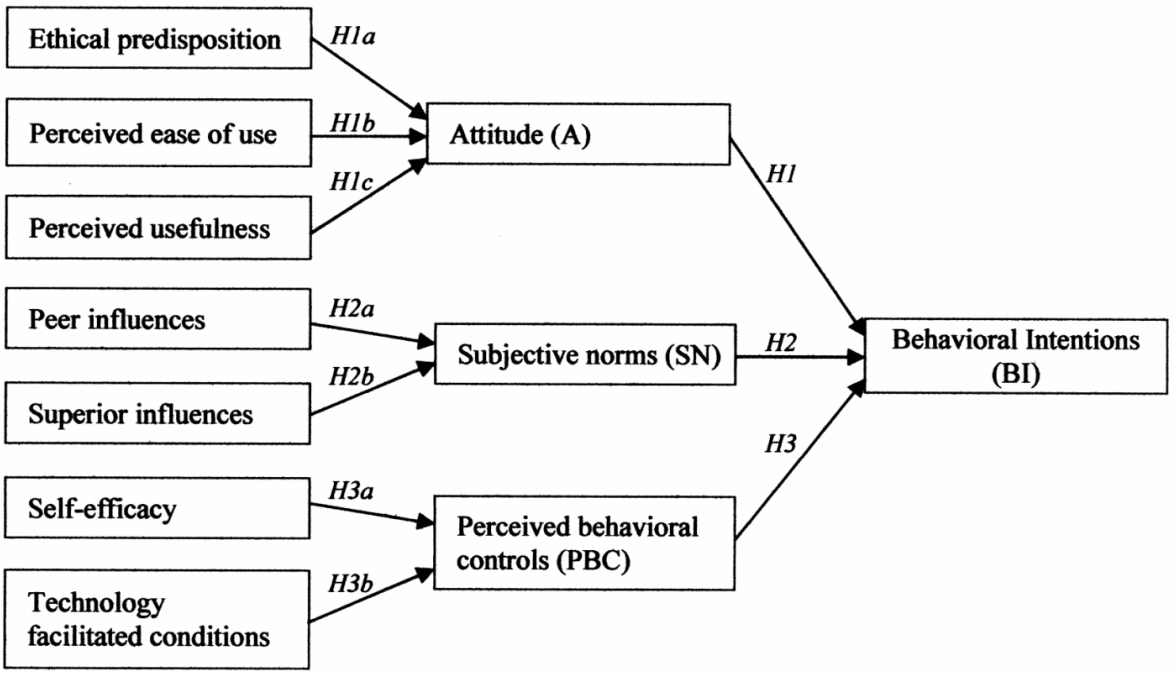
H2b: An individual's superior influences on peer-to-peer file-sharing have no impact on their subjective norms for sharing files over peer-to-peer networks.

H3: An individual's perceived behavioral controls over peer-to-peer file-sharing have no impact on their intention to share files over peer-to-peer networks.

H3a: An individual's self-efficacy related to peer-to-peer file-sharing has no impact on their perceived behaviora

H3b: The technology facilitated conditions for an individual to use peer-to-peer file-sharing have no impact on their perceived behavioral control on sharing files over peer-to-peer networks.

Figure 2. Hypotheses from the decomposed TPB related to an individual's intention to share files



Methodology

Our instrument measured the monolithic belief structures and the constructs separately. We asked questions about belief structures (e.g. subjective norms), which are each from the theory of planned behavior; these are classified as direct questions. We asked questions relating to each construct, considered indirect questions, because we are using the decomposed theory of planned behavior and each construct is related to a specific belief structure. Each measurement approach makes different assumptions regarding the underlying cognitive structures (Ajzen, 1991).

Based on the equations for the relationships in the theory of planned behavior, our survey instrument includes measures for the three monolithic belief structures and the constructs for each in the decomposed theory of planned behavior. We adapted existing scales for use in our study because they have been empirically validated in previous studies. Individual items were modified to reflect our specific technological context. Table 1 summarizes our measurement concepts which include monolithic belief structures and individual constructs comprising each structure, and the sources used for the items in our instrument.

Table 1. Measurement Constructs and Item Sources

Monolithic belief structure from the TPB	Construct	Source for items in instrument
Attitude	Ethical predisposition	Gopal et al. (2004)
	Perceived ease of use	Davis et al. (1989)
	Perceived usefulness	Davis et al. (1989)
Subjective norms	Peer influences	Taylor and Todd (1995)
	Superior influences	Taylor and Todd (1995)
Perceived behavioral control	Efficacy	Taylor and Todd (1995)
	Facilitating conditions – technology	Taylor and Todd (1995)

Our adaptations were doubled-checked using the procedures suggested by Ajzen (1991, 1985). With the exception of ethics related items, all survey items relate specifically to the peer-to-peer technology rather than computer usage in general or to alternate file-sharing technologies such as streaming media. This is in accordance with recommendations by Fishbein and Ajzen (1975).

There were 52 items in the instrument we used for a pilot study, each measured with a Likert scale having a range of one through seven. This study was conducted by collecting data from 20 students at two separate universities. While college students are a convenient sample, evidence supports the supposition that this group is among those most frequently sharing files over peer-to-peer networks; a 2005 NPD Group study reported this demographic are much more likely to be engaged in this activity d'Astous, Colbert, and Montpetit (2005).

Analysis of the pilot study indicated several redundant questions and several with inconsistent wording. These were either modified or removed, bringing the total number of items in our instrument to 46. This revised survey was administered to undergraduate and graduate students in business and economic programs at three universities in the Mid-West, Northeast, and Mid-Atlantic States, and analyzed as follows.

Analysis

From a total of 246 solicitations for our revised survey we received 204 completed surveys, a response rate of 83%. As with our pilot study, all responses were anonymous and the completely voluntary nature of the survey was stressed; no incentive was offered to entice completed surveys. After removing surveys with one or more incomplete answers our sample size for analysis was 179. The reliability of each construct was measured by Cronbach's alpha and is summarized in Table 2. In the TPB manual for researchers Francis et al. recommend a cutoff of 0.6 as a rough guide for internal consistency scores (Francis et al., 2004).

Table 2. Chronbach's Alpha for Each Construct and Belief Structure

	Chronbach's Alpha
Construct	
Ethical predisposition	.71
Perceived ease of use	.85
Perceived usefulness	.78
Peer influences	.84
Superior influences	.92
Efficacy	.69
Facilitating conditions – technology	.81
Belief Structure	
Behavioral Intention (BI)	.81
Attitude – direct measure (A)	.87
Subjective Norms - direct measure (SN)	.82
Perceived Behavioral Control - direct measure (PBC)	.64

Once adequate reliability was established we determined the correlations between our direct measures for monolithic belief structures and our indirect measures for their associated constructs. Our instrument measured the monolithic belief structures and the constructs separately. First, we asked direct questions about a belief structure (e.g. subjective norms), because they address the structure directly they are considered as direct questions. Second, we asked questions relating to each construct, considered as indirect questions. Each measurement approach makes different assumptions regarding the underlying cognitive structures. A low correlation between the measurements of monolithic belief structures and the measurements for constructs would flag a problem that would need to be addressed before proceeding. Table 3 shows the correlations between our measures; all are significant at $p < .05$ enabling us to proceed to further analysis.

Table 3. Correlations of direct and indirect measures; all significant ($p < .05$)

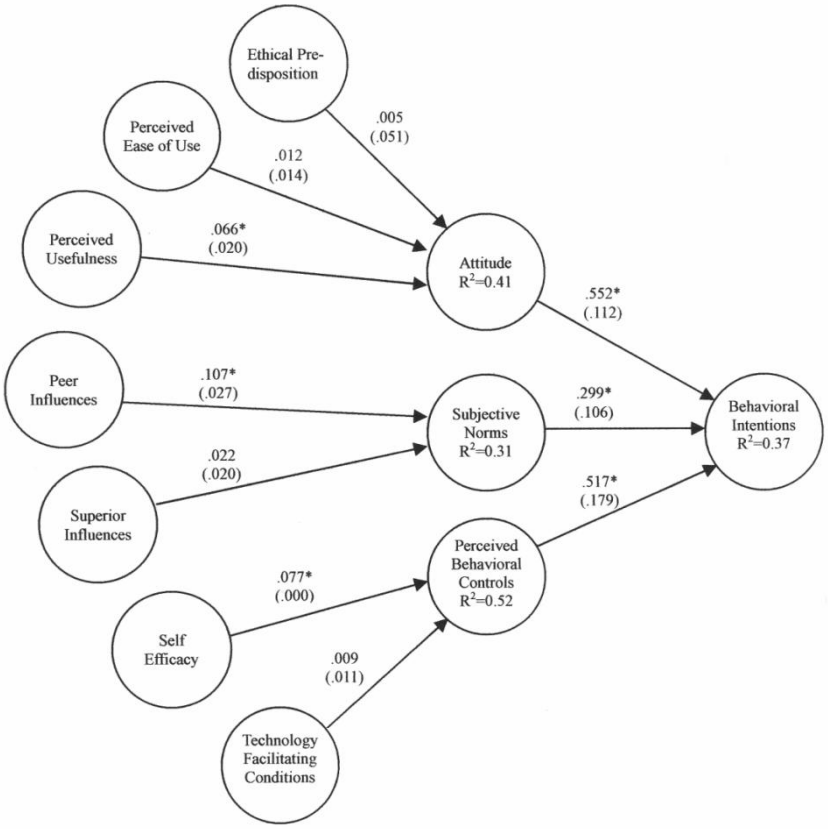
		A	SN	PBC	BI	A	SN	PBC	BI
Indirect measures	A	1.00							
	SN	0.35	1.00						
	PBC	0.75	0.38	1.00					
	BI	0.50	0.47	0.53	1.00				

Direct measures	A	0.54	0.33	0.46	0.57	1.00			
	SN	0.41	0.42	0.31	0.45	0.47	1.00		
	PBC	0.52	0.35	0.39	0.34	0.31	0.31	1.00	
	BI	0.38	0.43	0.40	0.62	0.37	0.24	0.26	1.00

Analysis

We constructed a structural equation model using EQS 6.1 to test our decomposed theory of planned behavior modeled in figure 2 above. Figure 3 shows the path coefficients and standard errors for each construct (* = $p < .05$).

Figure 3. Path coefficients for the decomposed TPB model (standard errors) *p<.05



The goodness of fit scores for the model are χ^2 = 1594, p<.0001; CFI = .711; RMSEA = .100, with n = 179. The R^2 value indicates that the decomposed theory of planned behavior model explains 41% of the variation in behavioral intentions. This is comparable to the R^2 values from successful behavioral intention models in information systems research (Legris et al., 2003).

Discussion and Conclusions

Our results show all three monolithic belief structures of the theory of planned behavior to be significant predictors of file-sharing intentions. However, these results indicate ethical predisposition is not a component of an individual's attitude towards file sharing. This is contrary to some previous research such as the findings made by Gopal et al. (2004). However, Gopal et al. were specifically studying intention to pirate music, while our study considers the activity of file sharing as a whole and is not focused solely on piracy. This is an important result for networks managers and ISPs grappling with how to manage P2P file sharing, and indicates that pointing to ethical considerations is likely to have no effect on users' intentions. ISP's are struggling to control P2P file sharing so that networks are not overwhelmed by relatively few users. Attempts to control this are likely going to have to technological in nature and not attempt to rely on ethical values such as fairness.

Each monolithic belief structure is a significant predictor of behavioral intention. In addition, one construct was significant for each belief structure. Perceived usefulness, peer influences, and self-efficacy each are significant predictors of attitude, subjective norms, and perceived behavioral controls respectively. Our significant results mirror those of some previous studies described in the background section.

With regard to the constructs representing each belief structure, we conclude that perceived usefulness is a significant predictor of an individual's attitude towards file sharing, a result we expected. However, perceived ease of use was not. One possible explanation for the lack of significant results for perceived ease of use is that current users are comfortable with technology. This is supported by self-efficacy; those who feel confident in their ability are not concerned with the ease of learning file sharing software.

The finding that technology facilitating conditions do not affect intentions was counter to our expectations. We had expected the restrictions placed on this method of file sharing to have had some effects. One possible reason could be that our respondents are using networks with few if any limitations to file sharing. To assess this we sampled several colleges and universities. Each school had a policy for file sharing but had not taken any action to prevent it. Each school provided more than ample throughput to adequately support this technology, supporting the results we found for technology facilitating conditions.

Perhaps most interesting is what was found not to be significant. The results for the effects of superior influences suggest that parents, teachers, and authorities do not have much of an influence in determining an individual's intention to file share. This finding is consistent with previous research and the role of superior influences on music piracy through file sharing networks (LaRose and Kim, 2007). LaRose and Kim did not find subjective norms to be significant predictors of intention directly. However, they found this result puzzling and suggested that peer pressure may be the best way to convince people that their behavior is out of line with their peers.

Altschuller and Benbunan-Fich (2009) found that 67% of peers recommended downloading and file sharing. Indeed they found that a portion of their sample while they agree downloading is wrong, condone others engaging in music piracy and may participate themselves at some point. In our study Hypothesis H2a was supported for peer influences. Some previous research seems to support the idea that peer pressure may be a more effective means of influencing behavioral intention (and behavior) than superior influences. These results suggest that perhaps the best way to influence file sharing behavior is through changing the peer culture. Changing culture is notoriously difficult but we have at least anecdotal evidence of environments where the illicit use of file sharing is well below the norm for a U.S. college setting. For example Viriginia Military Insittute (VMI) has strict rules regarding file sharing, but students tend to enforce the rules among each other more than from the administration. Certainly the culture on that campus influences the students' sense of right and wrong.

There are limitations of this study. First, our sample is limited to undergraduate and graduate college students. While there is evidence that people in this age group are most likely to file share, they clearly don't constitute the population of file sharers. Extending future studies to a wider sample pool may increase the explanatory power of the model. Second, the resources file sharing networks are consuming world-wide are not bound to America, but affect the global on-line community. International versions of this study will play

an important role in understanding the cross-cultural differences in intention to file share. Finally, third, we measured a narrow definition of ethical predisposition. Expanding the measure of ethics to be more comprehensive may provide a better understanding of ethic's role in file sharing.

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Key of Item Abbreviations

E = Ethics
A = Attitude
SN = Subjective Norms
PBC = Perceived Behavioral Controls
BI = Behavioral Intention
PEAU = Perceived Ease of Use Attitudinal Component
PEAUD = Perceived Ease of Use Desirability of Outcome
PUA = Perceived Usefulness Attitudinal Component
PUD = Perceived Usefulness Desirability of Outcome
SNPIN = Subjective Norm – Peer Influences Normative Beliefs
SNPIM = Subjective Norm – Peer Influences Motivation to Comply
SNSIN = Subjective Norm – Superior Influences Normative Beliefs
SNSIM = Subjective Norm – Superior Influences Motivation to Comply
PBCECB = Perceived Behavioral Control – Efficacy Control Beliefs
PBCEFC = Perceived Behavioral Control – Efficacy Facilitating Conditions
PBCTCB = Perceived Behavioral Control – Technology Control Beliefs
PBCTFC = Perceived Behavioral Control – Technology Facilitating Conditions

Appendix A: Survey Instrument (item key at bottom)

Q#	Item	Question	Left Anchor	Right Anchor	Reverse Coded
1	E1	An executive earning $150,000 a year pads his expense account by about $5,000 a year.	always acceptable	never acceptable	Yes
2	E2	In order to increase profits a manager let a factory exceed the legal limits for environmental pollution.	always acceptable	never acceptable	Yes
3	E3	Because of pressure from company, a stock broker recommended a type of bond he didn't think was a good investment.	never acceptable	always acceptable	Yes
4	E4	A small business received quarter of its gross revenue in cash. The owner reported only half of that for income tax.	always acceptable	never acceptable	Yes
5	E5	An engineer discovered a possible design flaw he thought was a safety hazard. His company decided not to correct that flaw. The engineer decided to keep quiet instead of notifying anyone outside the company.	never acceptable	always acceptable	No
6	A1	Using file sharing software to share files is …	a bad idea	a good idea	No
7	A2	Using file sharing software to share files is …	worthless	worthwhile	No
8	A3	Using file sharing software to share files is …	good for me	bad for me	Yes
9	A4	Using file sharing software to share files is …	foolish	wise	No
10	SN1	People who influence my behavior would think that I should share files	definitely	definitely not	Yes
11	SN2	People who are important to me would think that I should share files	definitely	definitely not	Yes
12	PBC1	I would be able to share files using file sharing software	strongly agree	strongly disagree	Yes
13	PBC2	Being able to share files is entirely within my control	strongly agree	strongly disagree	Yes
14	PBC3	I have the resources and the knowledge and the ability to share files	strongly agree	strongly disagree	Yes
15	BI1	Thinking about past, how often have you shared files?	never	very often	No
16	BI2	Thinking about now, how often do you share files?	never	very often	No
17	BI3	I intend to share files in the future	definitely	definitely not	Yes
18	PEUA1	I could easily configure file sharing software to let me share files	likely	unlikely	Yes
19	PEUA2	I would find it easy to get file sharing software to do what I want it to do	likely	unlikely	Yes
20	PEUA3	My interaction with file sharing software would be straight forward	unlikely	likely	No
21	PEUA4	It would be easy to download file sharing software	unlikely	likely	No
22	PEUA5	It would be easy for me to become skillful at using file sharing software	likely	unlikely	Yes
23	PEUA6	I would find file sharing software easy to use	likely	unlikely	Yes
24	PEUD1	File sharing software that is easy to install/configure is:	desirable	undesirable	Yes
25	PEUD2	File sharing software that will do what I want is:	desirable	undesirable	Yes
26	PEUD3	File sharing software that is straight forward to use is:	undesirable	desirable	No
27	PEUD4	File sharing software that is easy to find and download is:	undesirable	desirable	No
28	PEUD5	Becoming skilful with file sharing software is:	undesirable	desirable	No
29	PEUD6	File sharing software that is easy to use is:	undesirable	desirable	No
30	PUA1	Using file sharing software would enable me to obtain content more quickly	likely	unlikely	Yes
31	PUA2	The files I want to have (software, music, video) are readily available through file sharing	likely	unlikely	Yes

32	PUA3	Compared to other options, file sharing software lets me obtain files faster	likely	unlikely	Yes
33	PUA4	I would find file sharing software useful	likely	unlikely	Yes
34	PUD1	Obtaining content more quickly is:	undesirable	desirable	No
35	PUD2	Readily available content through file sharing is:	undesirable	desirable	No
36	PUD3	Better options for obtaining content are:	undesirable	desirable	No
37	PUD4	Useful file sharing software is:	desirable	undesirable	Yes
38	SNPIN1	My friends would think that I should use file sharing software	strongly disagree	strongly agree	No
39	SNPIN2	My classmates would think that I should use file sharing software	strongly disagree	strongly agree	No
40	SNPIM1	Generally speaking, I want to do what my friends think I should do	strongly disagree	strongly agree	No
41	SNPIM2	Generally speaking, I want to do what my classmates think I should do	strongly agree	strongly disagree	Yes
42	SNSIN1	People that I respect use file sharing	strongly disagree	strongly agree	No
43	SNSIN2	People who are important to me engage in file sharing	strongly disagree	strongly agree	No
44	SNSIM1	Generally speaking I want to do what people I respect do	strongly disagree	strongly agree	No
45	SNSIM2	Generally speaking I want to do what people who are important to me do	strongly disagree	strongly agree	No
46	PBCECB1	I would feel comfortable file sharing	strongly agree	strongly disagree	Yes
47	PBCECB2	If I wanted to I could easily use file sharing software	strongly disagree	strongly agree	No
48	PBCECB3	I would be able to use file sharing software without having someone teach me	strongly disagree	strongly agree	No
49	PBCEFC1	Being comfortable using a technology is:	unimportant	important	No
50	PBCEFC2	Finding file sharing software easy to use is:	unimportant	important	No
51	PBCEFC3	Being able to use file sharing software without formal instruction is:	unimportant	important	No
52	PBCTCB1	I think file sharing is prohibited on the network I use	strongly disagree	strongly agree	No
53	PBCTCB2	File sharing is discouraged on the network I use	strongly disagree	strongly agree	No
54	PBCTCB3	The speed of my Internet connection is too slow for file sharing	strongly disagree	strongly agree	No
55	PBCTFC1	The ability to file share on my network is:	unimportant	important	No
56	PBCTFC2	Open access to file sharing on my network is:	unimportant	important	No
57	PBCTFC3	Approval of file sharing on my network is:	unimportant	important	No
58	PBCRCB1	The content I want is not available through file sharing	strongly disagree	strongly agree	No
59	PBCRCB2	The content I want is available in the file format I want	strongly disagree	strongly agree	No
60	PBCRFC1	Having content available is:	important	unimportant	Yes
61	PBCRFC2	Having content available when I want it is:	unimportant	important	No