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# Legal Literacy and Users' Awareness of Privacy, Data Protection and Copyright Legislation in the Web 2.0 Era

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**Abstract.** Web 2.0 offers an easy way for individuals to share any kind of content. The users' new role of being a content producer is associated with the responsibility to observe the relevant law. In this article, relevant regulations of the German and Austrian law are presented. In an attempt to understand the factors that influence users' lawful behavior, the presented research examines the effects of legal literacy, awareness and lawful attitude on lawful and unlawful actions. The empirical study shows results from a survey of 1,134 students from three different faculties. Regression and mediation analyses were used to analyze the effects. The results indicate that legal literacy has a negative direct influence on lawful behavior, while lawful attitude shows a positive effect among Austrian students. Furthermore, legal awareness has a stronger effect on lawful attitude than legal literacy.

**Keywords:** Legal Literacy, Data Protection, Copyright, Lawful Behavior, Mediation Model.

## 1 Introduction

In recent years, much research has been done to investigate behavioral antecedents of ethical Internet usage. Ethical boundaries often go along with legal permissiveness. While in the early years of commercial Internet usage most legal aspects were only relevant to editorial content producers, the rise of the web 2.0 concept shifts more legal responsibility to the common user. With the increasing amount of user generated content, web 2.0 users face current and forthcoming challenges concerning lawful behavior. Currently, there are several types of application and platforms that follow the principles of web 2.0 – most of them relevant regarding privacy, copyright, and data protection issues.

Copyright infringements, privacy violations, as well as extensive information disclosure have flourished in recent years. Copyright holders, especially the music and software industries, have responded with a series of lawsuits. Public and private initiatives have started to raise web 2.0 users' awareness on responsible and lawful usage of personal and third party information. The effects of those measures seem unclear [1]. Copyright infringements and invasion of privacy remain prevalent. Thus, to

explore ways to effectively approach the problems, it is essential to investigate the underlying factors associated with web 2.0 users' choice to engage in unlawful behavior. Prior research has focused on specific forms of unlawful behavior within those regulations, for example on music piracy [1-2], software piracy [3-5], or privacy issues [6-8]. An integrated research approach that addresses the problem on a more abstract level can help gain a more holistic view on factors influencing web 2.0 users' unlawful behavior.

The aim of this study was to identify the legal literacy of web 2.0 users as well as their awareness concerning certain legal domains - furthermore to find out about the lawful attitude arising from their knowledge and awareness that finally leads to lawful behavior. Therefore, hypotheses were derived from relevant literature and tested empirically. The data was collected from an online survey. Regression and mediation analyses were used to test the hypotheses.

The paper is organized as follows. Relevant literature concerning legal aspects on web 2.0 platforms, legal Internet literacy, legal awareness, and lawful attitude is reviewed and four hypotheses are derived in section 2. Next, the research model is presented and the methodology is described (section 3). In section 4, the results are analyzed. Finally, the findings are discussed along with future avenues for research in section 5.

## 2 Theoretical Considerations and Propositions

### 2.1 Legal Aspects on Web 2.0 Platforms

Even for private users, there are several legal and regulatory aspects that need to be considered when actively posting content on web 2.0 platforms. The main legal domains are

1. Data Protection;
2. Privacy Aspects and General Terms and Conditions;
3. Copyright.

**Data Protection.** The Austrian as well as any other European Data Protection Act is based on the extensively regulated European Data Protection Directive (Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data). Austrian Data Protection Law might not be applied in most cases of web 2.0 usage since the operating company of the platform is hardly ever based in Austria. Once the state in which an operating company is registered is part of the European Union, the home state regulation applies and the law of the country of residence is applicable. Since data protection regulations are highly harmonized within the European Union, the data protection principles of the Europe-

an Directive are applied.<sup>1</sup> Therefore, it can be assumed that the Data Protection Directive serves as minimum standard. If the operating companies are not registered in the European Union, data protection law of the home country of the user applies [9]. The main principles of the Data Protection Directive claim that personal data should not be processed except when certain conditions are met. One important exception is when the data subject agrees to the processing.

One main characteristic of web 2.0 platforms is the fact that a platform user is controller of the data entered to the platform and at the same time data subject concerning his personal data. The platform operator generally demands the right to access and process all user generated data for its own purpose. In that case the operator is seen as the controller and the user has to give an unambiguous, specific, and informed consent to the data processing. In most cases of web 2.0 platforms, such a consent does not exist or meet the legal demands [9-10]. Furthermore and strictly speaking, a web 2.0 user should obtain other users' consents when publishing their personal data on the platform (e.g. tagging a person on a photo).

Another major problem in web 2.0 is the common loss of control of data after a user deletes some of his content, the most famous social network Facebook is known for not removing deleted data such as status updates, photos, friend connections, or even whole profiles. That practice is not in accordance with Data Protection Law since the consent for the processing ceases to apply as soon as the data is deleted.

Finally there is an ongoing debate about the legal admissibility of social plugins by e.g. Facebook, Google+, or Twitter on private websites. The German data protection commissioner stated that the integration of social plugins on a website is not allowed without further ado if the exact form of data procession cannot be explained to the website's users [11]. At this time there is no Austrian regulation on the handling of social plugins, but they should be handled with care since it is normally not possible to obtain a precise and informed consent to the involved processing of personal data (e.g. IP address and information from cookies).

**Privacy Aspects and General Terms and Conditions.** In social networks one of the major issues is the disclosure of personal information. Especially young people tend to reveal private information on the Internet, predominantly on social network platforms like Facebook. Some research on such liberal disclosing behavior has tried to find out, whether the perception of possible risks is lower in young people and what benefits they expect from giving away that much personal information [12]. From a legal point of view there are two important aspects: (i) the privacy culture of the platform typically regulated in the platform's general terms and conditions and (ii) relevant legal clauses dealing with the right to privacy.

In its general terms and conditions a service provider defines the rules effective on his platform. Users need to accept them in order to take advantage of the service. The

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<sup>1</sup> For more information see the results of the legal procedure against "Facebook Ireland Ltd." at the Irish Data Protection Commission, after an Austrian law student raised more than 20 Complaints because of the violation of European Data Protection Principles by Facebook Ireland. ([www.europe-v-facebook.org](http://www.europe-v-facebook.org)).

platform operator decides on the privacy culture, the acceptable behavior towards information and data of other users and the extent to which users can change their own privacy settings on the platform.

Among the relevant legal clauses to protect privacy are Art. 8 ECHR (right to respect for private and family life) and regulations that protect a person against compromising exposure in a medium (e.g. newspaper, TV, or Internet), defamation of character, or libel of business reputation [9].

The function of tagging people on photos or videos offered in some social networks (e.g. Facebook) is legally questionable. In that procedure a user can upload an image and tag another Facebook user by unambiguously identifying him and automatically adding the new information (person identified on image) to his profile. Though the user concerned can delete the tag afterwards, he cannot prevent other users from adding a tag in the first place. The tagging function is legally dubious [13-14]. Adding the name to an uploaded image means revealing personal data of another person to the platform operators as well as other users and therefore taking an action relevant to data protection rules.

**Copyright.** While data protection issues are highly relevant in social network platforms, social sharing applications like Youtube or Flickr often have to deal with aspects of intellectual property rights. Content provided by users on such web 2.0 platforms (e.g. photos, videos, text) are subject to the copyright, which generally belongs to the original data's producers. An important aspect is the fact, that users often upload data without being the copyright owner. Such utilization of content without the approval of the copyright owner is illegal [15-16]. Concerning the further usage of such data, especially the download by private users, there are different regulations in Germany and Austria. In Germany the legal private copy is regulated in § 53 sec.1 UrhG. The regulation shall apply to private copies notwithstanding their format but only from legal sources. The amount of legal copies is limited to seven [17]. So the German law states that each download of an illegal or an illegally uploaded content is a copyright infringement since it is not possible to create a legal private copy from an illegal source [16]. In Austria, the utilization of content without the approval of the copyright owner is usually illegal as well. The legal private copy is regulated in § 42 sec. 4 UrhG. In the Austrian copyright law the explicit mention of the need for a legal source is missing. Therefore, there is an ongoing debate whether a legal private copy can be made by downloading from an illegally uploaded source (e.g. film or sound file) [9], [18-19]. Obviously the Austrian legislative body consciously did not include the explicit regulation in the legal text. Furthermore, there is no elucidating final judgment by the Austrian Supreme Court. So currently, the download of digital content like film or music files (not software!) by individuals is not explicitly illegal in Austria. Practically, such cases are not prosecuted at the time.

Regarding the copyright of software, there are EU-based differences concerning the copying for private use. It is illegal to copy software for personal purposes or to pass on to relatives or close friends. According to EU regulations it is only allowed to make a backup copy of the software, but that copy cannot be used or passed on to

other persons [19]. For that reason it is illegal to copy and pass on operating systems or office software.

In social networks and social sharing platforms the sharing of photos and self-made videos showing other people in private situations is very common. The German law (§ 22 KunstUrhG) regulates that images of persons can only be taken and made available to the public with the consent of the person shown on the image. By comparison, the Austrian law (§ 78 UrhG) states that it is prohibited to make an image of any individual and publish it if it could affect their legitimate interests [9]. That does not mean that there is a general prohibition to make images of other people accessible, only to make them available to the public without their consent (Germany) or when personal interests are affected (Austria) is illegal. Being at a certain place at a certain time is not sufficient to meet the requirements of the defined legitimate interests, but when images are derogatory, vilified, implying untrue circumstances, or if they show very private situations the regulations of privacy rights apply [17].

## **2.2 Legal Internet Literacy**

Internet users face challenges that may affect legally compliant online interactions. Challenges a typical web 2.0 user may encounter include reading and understanding a platform's general terms and conditions; dealing with privacy issues when entering personal data; knowing copyright conditions like owners and exploitation rights when uploading photos, videos, or texts; understanding data protection principles when revealing own or other people's personal information; and being aware of national legal practices concerning copyright infringements when downloading music, films or software. All these interactions require more than basic legal knowledge and competency to ensure that one is not incurring a penalty or compensation for damages.

Legal Internet literacy is a complex construct that is closely related to legal literacy. Legal literacy is claimed to be required for effective participation in modern society [20-21]. The opportunities to interact online are nearly unlimited and since the emergence of web 2.0 concepts and applications users can easily and without special skills take part in the production and manipulation of content. Along with these features comes the responsibility to know the regulatory framework and the legal boundaries of their action.

At present there is no standard definition for legal literacy. Originally, the term was used to describe an aspect of professional education in law. In that sense being legally literate meant to be able to read and write legal arguments, judgments and legislations that are part of the body of law [22]. Later, a broader meaning of legal literacy was established. White defined it as the "degree of competence in legal discourse required for meaningful and active life in our increasingly legalistic and litigious culture" [21]. Several other definitions emphasize the broader meaning of legal literacy that expands from the professional legal practitioner into the society. The Canadian Bar Association brought this idea to the point and defines legal literacy as "the ability to understand words used in a legal context, to draw conclusions from them, and to use those conclusions to take action" [23].

The present study defines legal Internet literacy as the ability of average skilled web 2.0 users to read, understand, and interpret legal text in order to align one's actions with these statutory specifications. The better the understanding of legal regulations on actions often associated with the use of web 2.0 platforms is, the higher the chance is to avoid infringements of data protection or copyright laws [24-26].

The above considerations suggest that there is a positive relationship between legal Internet literacy and intended lawful behavior.

In the theory of reasoned action (TRA) Azjen and Fishbein do not explicitly mention knowledge or literacy as a component but they argue that attitudes are a function of beliefs [27]. Those beliefs refer to beliefs about the consequences of certain behavior (e.g. prosecution) and are therefore closely related to knowledge and literacy [1]. Other studies dealing with environmental attitude found out, that changing the knowledge and beliefs (e.g. by increasing literacy) also changed the attitude [28-30]. Hence, increasing legal Internet literacy and therefore increasing knowledge about what is legal and what are the consequences of illegal behavior will lead to more lawful attitudes.

Based on the considerations outlined above, there is a positive relationship between legal Internet literacy and lawful attitude.

*Hypothesis 1: Legal Internet literacy (LIT) has a positive effect on lawful behavior (BEH).*

*Hypothesis 2: Legal Internet literacy has a positive effect on lawful attitude (ATT).*

### **2.3 Legal Awareness**

The ability to read, understand, and interpret legal texts in order to act in a lawful way is one important factor that can have influence on a person's attitude towards lawful behavior. But legal literacy is only one aspect when it comes to the evaluation of potential consequences of one's actions. An individual may be literate to read and understand relevant regulations, but unaware about the existence of specific laws or of the consequences a certain behavior might have in a certain situation [3]. As the awareness is increased, a person's attitude might change. In particular, an individual might be able to read copyright laws, but the awareness of the specific consequences arising from copyright infringement might be low. The perceived prosecution risk and the risk of a lawsuit are important aspects of legal awareness and have been found to influence ethical decision making [2], [4], [31]. Any unlawful behavior on the web includes the user's risk of civil action by damaged companies or people as well as the legal prosecution for copyright or data protection infringements. Chiou et al. found out that the perceived prosecution risk, which is an important aspect of legal awareness, influences the attitude of unauthorized music downloads negatively. The authors suggested to promote more aggressive publicity of possible prosecution and to exemplify prosecution cases in order to heighten awareness of the risks associated with unlawful behavior [2].

As the awareness of laws and potential prosecutions is increased, the positive attitude towards unlawful behavior should become less positive. Consequently, these considerations lead to the following hypothesis:

*Hypothesis 3: Legal awareness (AW) has a positive effect on lawful attitude.*

## 2.4 Lawful Attitude

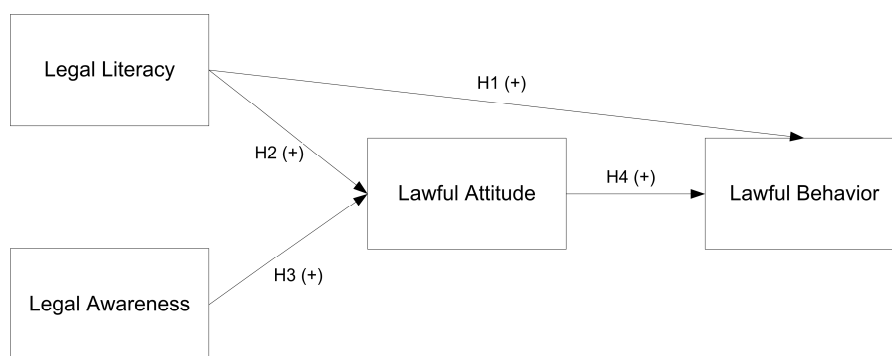
Several studies have shown that attitudes are an important predictor of unethical behavior such as cheating, stealing, or lying (see e.g. [32]). Therefore, the TRA has been developed to explain these correlations. The theory has been used by many researchers to describe ethical decision making behavior [33]. As mentioned above, attitudes toward a behavior correlate with the beliefs about certain consequences arising from the intended behavior. Therefore, attitude constitutes the sort and intensity of feelings one has for or against an object or behavior [1]. So attitude describes a phenomenon that combines a person's beliefs about the consequences of an intended behavior and the evaluation of these consequences. In particular, TRA predicts that if a person believes that consequences of a behavior are predominantly positive then the person's attitude towards behavior will be positive as well. In other words, if a person believes that lawful behavior on the Internet will have predominantly positive outcomes, he or she will have a positive attitude towards lawful behavior.

Both, the TRA as well as the theory on planned behavior (TPB) state that behavioral intention is determined by attitude. Several empirical studies confirm the significant relationship between attitudes and the intention to act [3], [34-35].

Therefore, the following hypothesis is suggested:

*Hypothesis 4: Lawful Attitude has a positive effect on lawful behavior.*

The research model is presented in Figure 1.



**Fig. 1.** Research Model



### 3 Research Method

The research hypotheses were tested empirically using data collected from an online survey. We chose a quantitative approach because a significant amount of research on the investigated constructs has already been conducted and several theories and hypotheses can be derived from prior work, as outlined in section 2. In contrast, a qualitative approach would be suitable for investigating topics that lack fundamental research and formal theories. Such nascent research areas are usually characterized by little knowledge on the research topic, a small number on prior work and the aim to engage in inductive theory development [36]. Since the research object of the presented study is lawful behavior on the Internet, people who do not use the Internet are not relevant to the presented study. Therefore, an online survey is a suitable instrument for the data collection and common critics on the usage of online questionnaires are not reasonable due to the target population. That is why the measure was a common choice because of the research subject (behavior on the Internet) [8]. The factors Legal Internet Literacy and Lawful Behavior were designed as manifest constructs to directly measure the knowledge of the respondents as well as their actual behavior instead of letting them rate the extent to which they believe to know facts or are likely to act. Therefore, test questions for legally relevant conditions were developed to measure Legal Internet Literacy. For Lawful Behavior legal and illegal situations were presented in the questionnaire and the students were asked to answer, whether they have already conducted these actions. For the analysis, only the illegal actions were taken into account. Legal Awareness and Lawful Attitude were defined as latent variables, measured with a five-point Likert scale and a two-level scale to express agreement/disagreement to a presented hypothetical situation. Table 1 presents a sample of four items for each construct.<sup>2</sup> For the following analysis for each construct the items were cumulated and transformed into interval scaled percentage rates, which indicated if an answer was correct (LIT); an action was legal (BEH); high awareness was shown (AW); or an intention was in accordance with the applicable law.

Regression and mediation analyses [37] were used to test the hypotheses. SPSS software was used for the regression analysis. The macro offered by Hayes to estimate the path coefficients in multiple mediation analyses and generate bootstrap confidence intervals for total and specific effects was used to test H1, H2, and H3 [38].

The regression analysis determines the effect of an independent variable on a dependent variable. The concept of a mediation hypothesis model is to test how, and to what extent an independent variable affects the dependent variable through one or more potential intervening variables, called mediators. Therefore, a model is tested in which the independent variable's effect can be separated into its direct effect on the dependent variable (without considering the mediator factor; c-path) and its modified effect on the dependent variable including the mediator (c'-path). Without the mediator, all of the paths would be quantified with the unstandardized regression coefficients and c-path is defined as the product of a and b. In mediation models the total

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<sup>2</sup> See [https://gw.ie.jku.at/dl/Construct\\_Item.pdf](https://gw.ie.jku.at/dl/Construct_Item.pdf) for the full list of items of the questionnaire per construct.

effect of the independent on the dependent variable can be expressed as the sum of the direct and indirect (= mediated) effects ( $c = c' + ab$ ) [37].

Bootstrapping is a non-parametric procedure based on resampling with replacement of random samples of the data. (e.g. 1000 times). Each time, the indirect effect is computed. The mean of these indirect effects will not exactly equal the indirect effect and is therefore corrected [39]. In the presented study, bootstrapping is used to test the indirect effect from the mediation analysis.

**Table 1.** Constructs and item examples

<b>Construct</b>	<b>Item</b>
Legal Literacy	Total: 31
	<i>Indicate whether the statement is true or false:</i> Facebook does only unlink deleted user data. It is illegal to share mp3 files on file sharing networks.
Legal Awareness	Total: 6
	<i>Rate the extent to which you agree with the following:</i> I know the legal problems related to social media platforms. I am aware of the legal regulations related to copyright.
Lawful Attitude	Total: 11
	<i>Indicate whether you agree to the statement:</i> Copyright Infringement is a trivial offense. Copyright infringements need to be effectively prosecuted.
Lawful Behavior	Total: 8
	<i>Indicate whether you agree to the statement:</i> I have already uploaded mp3 files to a public platform. I have already given a copy of a copyrighted digital medium to a friend.

## 4 Results

### 4.1 Demographics and Correlations

The sample for this study is based on registered students from a university in Austria which is offering about 60 academic degree programs in the areas of (i) law (REWI), (ii) social sciences, economics and business (SOWI), and (iii) engineering and natural sciences (TNF). Although students are often criticized for not being representative for the population as a whole, they are a suitable target population in the presented study due to their age, because Austrian statistics show that people between 16 and 44 years are most likely to have Internet access [40]. Besides, one aim of the presented study is to investigate the effects of education on behavior. Students have a high educational background and are therefore suitable when investigating the effects of legal literacy on lawful behavior. Furthermore, similar samples have been examined to explain ethical behavior [41-43] and software piracy [44-45]. All of the nearly 18,000 students registered in January 2012 were asked to complete an online questionnaire, provided they named a valid e-mail address in the student administration system and

didn't opt out of the voluntary research information newsletter. A total of 1,624 students participated in the survey, 1,134 of them completed the questionnaire.

**Table 2.** Intercorrelations between control variables and constructs

	Mean	SD	Age	Gender	REWI	SOWI	TNF	Bachelor	Master	Diploma	PhD	Doctoral
Age	29.13	9.83	1									
Gender	0.51	--	-0.123***	1								
Faculty	REWI	0.27	--	0.155***	0.080**	1						
	SOWI	0.52	--	-0.036	0.136***	-0.629***	1					
	TNF	0.21	--	-0.123***	-0.253***	-0.314***	-0.541***	1				
	Bachelor	0.28	--	-0.219***	-0.018	-0.232***	0.073*	0.163***	1			
Level of studies	Master	0.12	--	0.080**	0.81**	-0.053	-0.045	0.112***	-0.232***	1		
	Diploma	0.51	--	0.025	0.114***	0.304***	-0.004	-0.324***	-0.636***	-0.376***	1	
	PhD	0.01	--	0.076*	-0.089**	-0.052	-0.074*	0.147***	-0.073*	-0.043	-0.117***	1
	Doctoral	0.08	--	0.194***	-0.047	-0.092**	-0.028	0.134***	-0.181***	-0.107***	-0.292***	-0.033
LIT	0.67	0.12	-0.054	-0.245***	-0.055	-0.065*	0.139***	-0.050	0.111***	-0.056	0.021	0.044
AW	0.68	0.14	0.068*	0.113***	0.138***	-0.052	-0.086**	-0.120***	0.037	0.068*	-0.046	0.050
ATT	0.52	0.13	0.204***	0.124***	0.168***	-0.092**	-0.070*	-0.077**	0.019	0.053	-0.052	0.030
BEH	0.80	0.18	0.068*	0.246***	0.155***	0.013	-0.183***	-0.030	-0.112***	0.108***	-0.017	-0.008

Note: n = 1134

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001

**Table 3.** Intercorrelations between constructs

	Mean	SD	LIT	AW	ATT	BEH
LIT	0.67	0.12	1			
AW	0.68	0.14	0.059*	1		
ATT	0.52	0.13	-0.101**	0.267***	1	
BEH	0.80	0.18	-0.187***	0.204***	0.254***	1

Note: n = 1134

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001

Table 2 and 3 show the means and standard deviations for the defined constructs (LIT, AW, ATT, BEH) and control variables (age, gender, faculty, level of studies). Gender, faculty, and level of studies are dichotomous variables and were 0-1 dummy coded with 1 indicating male / faculty or level of studies applied and 0 female / not applied. Age correlated significantly with three of the four focal variables (AW, ATT, BEH). Gender showed a significant correlation with all investigated constructs. Not all of the control variables representing the level of studies correlated significantly with the constructs. Only one of the three variables indicating faculty membership significantly correlated with all four constructs (TNF). Consequently, all control variables representing faculty and level of studies were excluded from further analyses. Since age and gender are prevalent control variables in research on effects on lawful behavior [46-48], both were not excluded. The Bravier-Pearson's correlation coefficient between LIT-ATT ( $r = -0.101^{**}$ ), LIT-BEH ( $r = -0.187^{***}$ ), AW-ATT ( $r = 0.267^{***}$ ), and ATT-BEH ( $r = 0.254^{***}$ ) were all significant. However, contrary to Hypothesis 1 and 2, the correlations between Legal Internet Literacy and Lawful Attitude (H2) as well as Lawful Behavior (H1) were negative rather than positive. Both positive correlation coefficients can generally be regarded as weak in size [32].

## 4.2 Regression and Mediation Model

Table 4 shows the results of the mediation analysis. As presented in the research model in figure 1, Legal Internet Literacy was defined as the independent variable, Lawful Behavior as the dependent variable, and Lawful Attitude as the mediator. Age and gender were included as control variables (CV). The adjusted R-squared of 0.1229 indicates that 12.3 percent of the effects on Lawful Behavior can be explained by the presented model.

**Table 4.** Results of the mediation analysis

	<b>B</b>	<b>SE</b>	<b>Sig.</b>	<b>Adj. R-Sq</b>	<b>F</b>	<b>df</b>	<b>p</b>
a-path (LIT-ATT)	-0.0613	0.0329	0.0625	0.1229	40.682	4.0 1129.0	< 0.001
b-path (ATT-BEH)	0.2833	0.0390	< 0.001				
c-path (LIT-BEH)	-0.1890	0.0441	< 0.001				
c' path (LIT-BEH)	-0.1716	0.0432	< 0.001				
CV1 (Age-BEH)	0.0008	0.0005	0.1347				
CV1 (Gender-BEH)	0.0720	0.0107	< 0.001				

Other than expected (H1), Legal Literacy had a significant negative (rather than positive) effect on Lawful Behavior (c-path). This effect decreased in size but remained significant (c' path) when the mediator variable, Lawful Attitude, was added to the prediction, which already indicates mediation. Furthermore, there was a significant *negative* effect of Legal Literacy on Lawful Attitude (a-path), which again was contrary to the hypothesis H2. However, in line with H4, Lawful Attitude showed a significant positive effect on Lawful Behavior (b-path). More importantly, the conducted bootstrap analysis revealed an indirect effect of LIT on BEH through ATT of  $B = -0.0174$ ,  $SE = 0.0097$ . The 95% confidence interval (CI) did not include zero, 95% CI [-0.0387, -0.0001], which indicates that the indirect effect is significant at  $p < .05$ . This implies, that the negative effect of LIT on BEH can partially be explained by its effect on ATT.

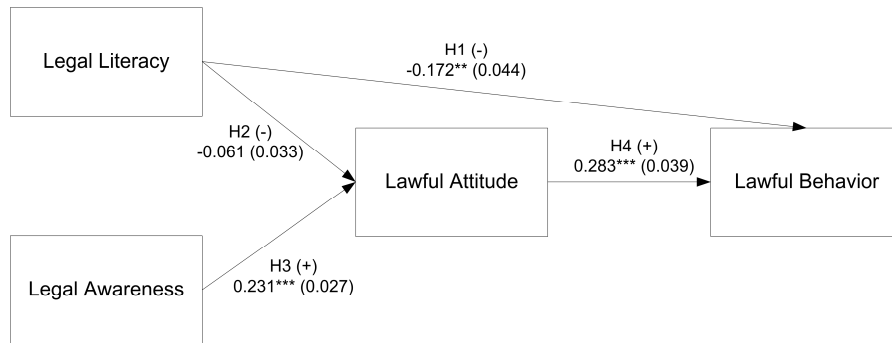
The effect of Legal Awareness on Lawful Attitude (H3) was tested using linear regression analysis. The results showed a significant effect ( $b = 0.231$  ( $se = 0.027$ ),  $\beta = 0.239$ ,  $p < 0.001$ ;  $adj. R-sq = 0.118$ ;  $F(3,1130) = 51.43$ ,  $p < 0.001$ ).

**Table 5.** Results of regression analysis (LIT/AW – ATT)

	<b><math>\beta</math></b>	<b>Sig.</b>	<b>Adj. R-Sq</b>	<b>F</b>	<b>df</b>	<b>p</b>
LIT-ATT	-0.080	0.006	0.1229	40.682	4.0 1129.0	< 0.001
AW-ATT	0.247	< 0.001				

Testing the comparative effects of Legal Awareness and Legal Literacy on Lawful Attitude, one can analyze which independent variable has higher effects on the dependent variable. As can be seen in table 5 Legal Awareness has a higher effect on

Lawful Behavior. This effect was positive and thus in line with H4. Figure 2 shows the research model with the non-standardized path coefficients



**Fig. 2.** Research model including results  
(Numbers represent b-coefficient and standard error; \*\* p < 0.01; \*\*\* p < 0.001).

## 5 Discussion and Limitations

The purpose of this study was to better understand whether legal knowledge and awareness typically associated with Internet use are related to a lawful attitude and how all of these three antecedents are related to the actual behavior. The findings reported in the preceding section strongly support two of the four hypotheses. As shown in figure 2, the results of H3 and H4 are statistically significant at level 0.001, of H1 at level 0.01. The negative relationship between Legal Literacy and Lawful Behavior (-0.17) does not support H1 and therefore does not confirm previous findings [24-26]. Testing the literacy as manifest variable instead of letting the students rate the extent to which they believe they know legal regulations, might influence the results. As explained in the theoretical consideration section, there are some not explicitly regulated circumstances in the Austrian Internet laws. The knowledge about the legal limbos seems to come along with the ken of the specific regulations, since there is an ongoing legal debate in scientific and popular literature. Therefore, literate students seem to know that along with such unregulated aspects comes a tradition of lax prosecution. This explanation is supported by the fact, that within the presented survey students of technical programs, who have greater knowledge of the technical procedures on the Internet, are more likely to behave illegally although they are savvier when it comes to relevant legal clauses. Thus, in Austria individuals are even safer from civil prosecution compared to people who commit infringements for commercial purposes because of strict data protection clauses.

The results show no evidence that indicate a significant positive relationship between legal literacy and lawful attitude (as predicted in H2). While some research in other social science areas indicates that knowledge may positively influence the attitude [28-30], our field of research does not support that hypothesis.

As hypothesized in H3, legal awareness proves to be positively related to a lawful attitude. Indeed, observing and considerate Internet users are more likely to recognize legally relevant circumstances. Being more conscious of illegal actions and their possible negative consequences reduces the risk of Internet users to be seduced by the simplicity and deceived anonymity that comes along with illegal online actions.

There is a significant positive effect of lawful attitude and lawful behavior. This result supports H4 and is consistent with prior research on attitude and behavior [3], [34-35]. One important difference between the presented study and previous research is that earlier studies defined the dependent variable behavior as a latent construct representing the intended behavior. In the presented study, the behavioral aspect was measured directly using a manifest construct examining actual behavioral facts rather than intended behavior. So far as is known, this study is the first to measure the knowledge and behavior factors directly as manifest variables in the IS literature.

Due to the fact that the presented model explains 12.3 percent of the effects on lawful behavior, more influencing factors (e.g. experiences from past behavior, perceived anonymity) should be added. As with most empirical studies, the spectrum of respondents is a limitation. A statistically random sample would have increased confidence in the result or maybe have produced different outcomes. There is evidence that younger people are less aware of risks associated with Internet usage. Therefore, it could be of interest to investigate the model using a sample of considerably younger or older participants. Furthermore, because of the globalization of Internet platforms, it is important to shift the focus of the empirical study from the Austrian legal system and investigate the relationships in other, potentially stricter legal systems. Especially in case of data protection, an investigation in American societies might be interesting, since the European data protection regulations are much stricter.

## References

1. Morton, N.: Understanding Attitudes toward Online Music Piracy. AMCIS 2004 (2004)
2. Chiou, J.-S., Huang, C., Lee, H.: The Antecedents of Music Piracy Attitudes and Intentions. *Journal of Business Ethics* 57, 161–174 (2005)
3. Goles, T., Jayatilaka, B., George, B., Parsons, L., Chambers, V., Taylor, D., Brune, R.: Softlifting: Exploring Determinants of Attitude. *Journal of Business Ethics* 77, 481–499 (2008)
4. Tan, B.: Understanding consumer ethical decision making with respect to purchase of pirated software. *Journal of Consumer Marketing* 19, 96–111 (2002)
5. Al-Rafee, S., Cronan, T.: Digital Piracy: Factors that Influence Attitude Toward Behavior. *Journal of Business Ethics* 63, 237–259 (2006)
6. Dinev, T., Hart, P.: Internet Privacy Concerns and Social Awareness as Determinants of Intention to Transact. *International Journal of Electronic Commerce* 10, 7–29 (2005)
7. Dinev, T., Hart, P.: Internet Privacy, Social Awareness, And Internet Technical Literacy. An Exploratory Investigation. *Proceedings BLED Conference 2004* (2004)
8. Tuunainen, V., Pitkänen, O., Hovi, M.: Users' Awareness of Privacy on Online Social Networking Sites – Case Facebook. *BLED 2009* (2009)
9. Burgstaller, P.: Soziale Netzwerke - Eine rechtliche Einführung. *lex:itec*. 16–22 (2012)

10. Europe-vs-Facebook: Complaint against Facebook Ireland Ltd. – 08 “Consent and Privacy Policy,” [http://europe-v-facebook.org/Complaint\\_08\\_ConsentPrivacyPolicy.pdf](http://europe-v-facebook.org/Complaint_08_ConsentPrivacyPolicy.pdf), (2011)
11. Düsseldorf Kreis: Datenschutz in sozialen Netzwerken, [http://www.bfdi.bund.de/SharedDocs/Publikationen/Entschliessungssammlung/DuesseldorferKreis/08122011DSInSozialenNetzwerken.pdf?\\_\\_blob=publicationFile](http://www.bfdi.bund.de/SharedDocs/Publikationen/Entschliessungssammlung/DuesseldorferKreis/08122011DSInSozialenNetzwerken.pdf?__blob=publicationFile) (2012)
12. Palfrey, J.G., Gasser, U.: *Born digital: understanding the first generation of digital natives*. Basic Books, New York (2008)
13. Europe-vs-Facebook: Complaint against Facebook Ireland Ltd. – 02 “Shadow Profiles,” [http://europe-v-facebook.org/Compalint\\_02\\_Shadow\\_Profiles.pdf](http://europe-v-facebook.org/Compalint_02_Shadow_Profiles.pdf) (2011)
14. Europe-vs-Facebook: Complaint against Facebook Ireland Ltd. – 11 “Removal of Tags,” [http://europe-v-facebook.org/Comlaint\\_11\\_RemovalOfTags.pdf](http://europe-v-facebook.org/Comlaint_11_RemovalOfTags.pdf) (2011)
15. Wien, A.: *Internetrecht eine praxisorientierte Einführung*. Gabler, Wiesbaden (2009)
16. Völtz, G.: *Die Werkwiedergabe im Web 2.0 - Reformbedarf des urheberrechtlichen Öffentlichkeitsbegriffs* (2011)
17. Höhne, T., Jung, S., Koukal, A., Streit, G.: *Urheberrecht für die Praxis alles, was Sie wissen müssen. [Handbuch]*. Verl. Österreich, Wien (2011)
18. Kössler, M.: *Die Vervielfältigung zum privaten Gebrauch im Zusammenhang mit der Internetnutzung*. In: Aksam-Ratejczak, W., Stadler, A. (eds.): *Aktuelle Rechtsfragen der Internetnutzung*. Facultas, Wien (2011)
19. Sonntag, M.: *Einführung in das Internetrecht*. Linde, Wien (2010)
20. Bilder, M.S.: *The Lost Lawyers: Early American Legal Literates and Transatlantic Legal Culture*. Boston College Law School Faculty Papers (1999)
21. White, J.B.: *The Invisible Discourse of the Law: Reflections on Legal Literacy and General Education*. *University of Colorado Law Review* 143–159 (1983)
22. Zariski, A.: *What is legal literacy? Examining the concept and objectives of legal literacy.*, <http://www2.athabascau.ca/syllabi/lgst/LGST249sample.pdf>, (2011)
23. Canadian Bar Association. *Task Force on Legal Literacy: Report of the Canadian Bar Association Task Force on Legal Literacy*. The Association, Ottawa (1992)
24. Fillichio, S.: *Legal Literacy for Laypeople: What You - and Your Students - Should Know about Common Legal Situations*. *Update on Law-Related Education* 12, 34–38 (1988)
25. Correia, A.M.R., Teixeira, J.C.: *Information literacy: an integrated concept for a safer Internet*. *Online Information Review* 27, 311–320 (2003)
26. Livingstone, S.: *Internet Literacy: Young People’s Negotiation of New Online Opportunities*. In: McPherson, T. (ed.): *Digital Youth, Innovation, and the Unexpected*. 101–122 (2007)
27. Ajzen, I., Fishbein, M.: *Understanding attitudes and predicting social behavior*. Prentice-Hall, Englewood Cliffs, New York (1980)
28. Petzelka, P., Korsching, P.F., Malia, J.E.: *Farmers’ Attitudes and Behavior toward Sustainable Agriculture*. *Journal of Environmental Education* 28, 38–44 (1996)
29. Kuhlemeier, H., van den Bergh, H., Lagerweij, N.: *Environmental Knowledge, Attitudes, and Behavior in Dutch Secondary Education*. *Journal of Environmental Education* 30, 4–14 (1999)
30. Bradley, J.C., Waliczek, T.M., Zajicek, J.M.: *Relationship Between Environmental Knowledge and Environmental Attitude of High School Students*. *Journal of Environmental Education* 30, 17–21 (1999)
31. Fraedrich, J.P., Ferrell, O.C.: *The impact of perceived risk and moral philosophy type on ethical decision making in business organizations*. *Journal of Business Research* 24, 283–295 (1992)

32. Zimbardo, P.G.: The human choice: Individuation, reason, and order vs. deindividuation, impulse, and chaos. In: Arnold, W.J. (ed.): Nebraska Symposium on Motivation (1969)
33. Weber, J., Gillespie, J.: Differences in ethical beliefs, intentions, and behaviors. *Research in Ethical Issues in Organizations* 265–283 (2001)
34. Ajzen, I.: The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50, 179–211 (1991)
35. Sheppard, B.H., Hartwick, J., Warshaw, P.R.: The theory of reasoned action. *The Journal of Consumer Research* 15, 325–343 (1988)
36. Edmondson, A.N., McManus, S.: Methodological Fit in Management Field Research. *Academy of Management Review* 32 (4), 1155–1179 (2007)
37. Preacher, K.J., Hayes, A.F.: Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *BRM* 40, 879–891 (2008)
38. Hayes, A.F.: INDIRECT, <http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html>
39. Shrout, P.E., Bolger, N.: Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods* 7, 422–445 (2002)
40. Statistik Austria: IKT-Einsatz in Haushalten 2012, [http://www.statistik.at/web\\_de/statistiken/informationsgesellschaft/ikt-einsatz\\_in\\_haushalten/index.html](http://www.statistik.at/web_de/statistiken/informationsgesellschaft/ikt-einsatz_in_haushalten/index.html)
41. Leonard, L.N.K., Cronan, T.: Illegal, Inappropriate, And Unethical Behavior In An Information Technology Context: A Study To Explain Influences. *Journal of the AIS*. 1 (2000)
42. Reiss, M.C., Mitra, K.: The Effects of Individual Difference Factors on the Acceptability of Ethical and Unethical Workplace Behaviors. *J. Bus. Ethics* 17, 1581–1593 (1998)
43. Kreie, J., Cronan, T.P.: Making ethical decisions. *Communications of the ACM* 43, 66–71 (2000)
44. Wagner, S.C., Sanders, G.L.: Considerations in Ethical Decision-Making and Software Piracy. *Journal of Business Ethics* 29, 161–167 (2001)
45. Kuo, F.-Y., Hsu, M.-H.: Development and Validation of Ethical Computer Self-Efficacy Measure: The Case of Softlifting. *Journal of Business Ethics* 32, 299–315 (2001)
46. Tittle, C.R., Ward, D.A., Grasmick, H.G.: Gender, Age, and Crime/Deviance: A Challenge to Self-Control Theory. *Journal of Research in Crime and Delinquency* 40, 426–453 (2003)
47. Meier, R.F., Weldon T. Johnson: Deterrence as Social Control: The Legal and Extralegal Production of Conformity. *American Sociological Review* 42, 292–304 (1977)
48. Moyano Dí az E.: Theory of planned behavior and pedestrians' intentions to violate traffic regulations. *Transportation Research Part F: Traffic Psychology and Behaviour* 5, 169–175 (2002)