



**THE IMPACT OF COMPUTER VARIABLES ON THE VIEWING AND SENDING
OF SEXUALLY EXPLICIT MATERIAL ON THE INTERNET:
TESTING COOPER'S "TRIPLE-A ENGINE"**

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ABSTRACT: *Cooper and colleagues have proposed that the "Triple-A Engine" of access, affordability and anonymity intensifies and accelerates online sexual activity (OSA) and is generating the next sexual revolution. If the Internet is causing a sexual revolution, then variations in technological variables such as control of Internet access and Internet skill level should explain a substantial portion of the variance in people's OSA. We test this claim with an online survey of students at an English Canadian university for one type of sexual activity: viewing and sending sexually explicit material on the Internet (SEMI). We test seven hypotheses about the impact of technological and non-technological variables on SEMI using bivariate and multivariate techniques. We conclude that only the technological variable of time online per week impacts SEMI. Overall, our study suggests that the "Triple-A Engine" is not producing sexual change and thus is not powering a sexual revolution.*

Key words: Anonymity Internet Online sexual activity Pornography
Sexually explicit material

INTRODUCTION

Cooper and various other sex therapists have spearheaded research on Internet sexuality. A central claim (e.g., Cooper, 1998; Cooper, Boies, Maheu, & Greenfield, 2000; Cooper, Delmonico, & Burg, 2000; Putman, 2000; Cooper & McLoughlin, 2001; Cooper & Griffin-Shelley, 2002b; Cooper, Morahan-Martin, Mathy, & Maheu, 2002) is that access, affordability and anonymity, the "Triple-A Engine," "combine to turbocharge, that is accelerate and intensify online sexual activity" (hereafter abbreviated as OSA) (Cooper & Griffin-Shelley, 2002b, p. 5). The impact of the "Triple-A Engine" will be so profound, they suggest, that it heralds the next sexual revolution, though what the revolution entails is left open (Cooper 1998; Cooper, Boies, Maheu, & Greenfield, 2000; Cooper, McLoughlin, & Campbell, 2000).

If the Internet is causing a sexual revolution, then variations in technological variables such as control of Internet access or computer skill level, should explain a substantial portion of the variance in people's OSA such as viewing or sending sexually explicit material on the Internet (hereafter

abbreviated as SEMI). Using data gathered from an online survey of mostly students at an English Canadian university, we test seven hypotheses using bivariate and multivariate techniques.

LITERATURE REVIEW

Drawing from the writings of Cooper and his associates and some writings that fit with their analysis, we will present a composite analysis of how the "Triple-A Engine" works. People have easy access to numerous sites and formats (e.g., chat rooms, CUseeMe [video chat]) (Kibby & Costello, 2001) with a variety of sexual foci (e.g., anal sex, inter-racial sex, safe sex) from a variety of purveyors (e.g., educational, personal and commercial). Content costs are affordable as "competition on the www keeps all prices low and there are a host of ways of getting 'free sex'" (Cooper, Delmonico, & Burg, 2000, p. 6; Cooper, Boies, Maheu, & Greenfield, 2000, p. 519).

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The key Internet feature is its perceived anonymity (Cooper, Boies, Maheu, & Greenfield, 2000; Putman, 2000; Carvalheira & Gomes, 2003). On the Internet, there is no risk of physical harm and people perceive little risk of emotional or social harm (McKenna, Green, & Smith, 2001). Anonymity combined with access and affordability leads to a sense of freedom and disinhibition which manifests itself in a faster pace of self disclosure and a willingness to talk frankly about sexual matters in general and sexual fantasies in particular (Cooper & Griffin-Shelley, 2002b; Döring, 2002). In consequence, on the Internet people are willing to experiment with their own sexuality by choosing different partners, different sexual activities and/or presenting themselves differently. Markers such as appearance, age and physical disabilities can be hidden (Cooper, 1998). People can learn the responses of others to a new sexual persona and decide how to cope with these responses. For instance, sometimes gay men come out first in cyberspace, then the "real world" (McKenna & Bargh, 1998; Ross & Kauth, 2002). Self-transformation is easier to accomplish when no longer enmeshed in one's basic social network. The Internet offers people the opportunity to establish new virtual relationships and identities which can become new social identities (McKenna, Green & Smith, 2001; McKenna & Bargh, 2000). The Internet has a vast potential for change ranging from enabling disenfranchised groups (e.g., those far from conventional beauty norms) to find partners to facilitating the compulsive viewing of sex (Adams, Oye & Parker, 2003; Cooper, 1998; Cooper & Griffin-Shelley, 2002a). Thus Cooper and his associates conclude that the "Triple-A Engine" is generating the next sexual revolution.

What the sexual revolution involves is left quite open. Cooper and associates identify numerous specific Internet facilitated changes. Examples include expanding the pool of potential sexual partners, decreasing the importance of physical attractiveness, connecting disenfranchised members of various communities, and tempting some people who would otherwise be at low risk of sexually compulsive behaviour into such behaviour (Cooper 1998; Cooper & Griffin-Shelley, 2002b). However, their central focus is on freedom, disinhibition, and the value of anonymity. Cooper, Boies, Maheu and Greenfield

(2000) assert that with people's new freedom online there "is an unprecedented need for skills and values related to self-mastery" (p. 541). The specific illustrations of what sorts of changes the "Triple-A Engine" is producing and the basic forces seen as underlying the revolution suggest, at a minimum, that it involves more OSA. This prediction fits with the repeated concern in Cooper and his associates' own research with the amount of time people spend engaging in OSA (e.g., Cooper, Scherer, Boies, & Gordon 1999; Cooper, Morahan-Martin, Mathy, & Maheu, 2002; Cooper, Månsson, Daneback, Tikkanen, & Ross, 2003). In addition, as more people become connected and connected to partners suitable for them, offline sexual activity probably increases.

The underlying logic at work here also suggests a component of the sexual revolution will be "holiday romance sexuality" or "March Break sexuality": people will get together with people whom they do not expect to meet again, reveal some aspects of themselves quickly, not be overly concerned about their reputation in regular daily life, be sexually active and move on. The emphasis on people identifying otherwise unexpressed aspects of their own sexuality, suggests a fragmented postmodern sexuality in which individuals, not the wider society, regulate their own sexual expression.

Cooper and his associates offer a variety of evidence for the Internet's revolutionary potential. First, they note social trends such as people using the Internet as an alternative to bars and singles clubs to meet other people (Cooper & Griffin-Shelley, 2002a). Second, they refer to the general literature on the Internet's disinhibiting effect compared to face-to-face interaction (See Joinson, 1998 and McKenna & Bargh, 2000 for a review of this literature which bases itself on experimental, survey, case study and postings to websites evidence from people communicating in general and sexually). Third, they divide people who engage in OSA into three groups: recreational users, compulsives for whom the Internet is one mode of expressing their sexual problems and at-risk users whose personality interacts with the Internet as a result of the Triple A factors to generate problematic sexual behaviour which otherwise would not exist (Cooper, Delmonico, & Burg, 2000; Cooper, Scherer, Boies, & Gordon, 1999). Case histories such

as a shy somewhat depressed man who comes across a pornographic site by accident and soon is masturbating compulsively while viewing these sites are used to illustrate at-risk users (Cooper, Putman, Planchon, & Boies, 1999). Cooper and associates (Cooper, Putman, Planchon, & Boies, 1999; Cooper, Morahan-Martin, Mathy, & Maheu, 2002) find people with online sexual problems (sexual compulsives plus at-risk users) constitute slightly under ten percent of the participants in two large surveys conducted on a major American news website (MSNBC) in 1998 and 2000, dates when the Internet was in its infancy. As the authors note, these news website samples are markedly different from the general population. For instance, the age and sex profile of the first sample was virtually identical to that of visitors of the top five adult sites in the same year and 24 % of participants worked with computers. A good predictor of the number of people who engage in an activity in a problematic way is often the overall incidence of the activity in the population. For instance, the number of alcoholics and problem gamblers in a population is determined substantially by the number of people in the society who drink or gamble (Lemmens, 2001; Aasved, 2003, p. 187).

Overall, the evidence on OSA is either very general in terms of the population as a whole, or focussed on those who sex therapists see as clients. While this evidence is compatible with a general change in sexual mores, it is not compelling evidence for a sexual revolution in the making.

The introduction of new technologies is often characterized by claims of fundamental change when no such change actually takes place (Brannigan & Hardwick, 2001; Stern & Handel, 2001; McKenna & Bargh, 2000). The telephone did not lead to a substantial increase in the proportion of people having affairs as some early opponents warned (Fischer, 1992, p. 26). This caution, combined with the lack of compelling evidence for an Internet-based sexual revolution, raises the question of whether the same overreaction applies here.

Goodson, McCormick, and Evans (2001) surveyed college students in Texas in 1998. They found that only 43% had accessed SEMI and only 2.9% did so frequently. While this early study is not indicative

of current realities, it was done the same year as Cooper, Putman, Planchon, and Boies (1999). Thus it highlights how selecting a sample who used the Internet for OSA produces a markedly different picture of OSA (e.g., 8.5% are sexual compulsives) than fits many of their contemporary Internet users. Boies' (2002) description of Canadian students' on- and offline sexual behaviour shows more OSA: 41.8% of the sample used the Internet to seek new people and spent on average 20 minutes a week doing so, 38.5% masturbated online and 5.9% viewed SEMI daily. While 82% agreed SEMI is arousing, 40% also agreed it is boring. Most OSA is solitary as indicated by students having had fewer online sexual partners than offline partners.

Cornwell and Lundgren's (2001) study of sexual chat room users found lower levels of involvement in romantic relationships online than offline. The best predictor of misrepresentation online was low involvement in the relationship. Cooper, Månsson, Daneback, Tikkanen, and Ross (2003) in a study of people using a major Swedish Internet portal found the main reasons for OSA were seeking partners and viewing SEMI. A study of cybersex in Portuguese chat rooms found that for the vast majority of participants cybersex is simply an excuse to meet people with similar interests to have real sex with later (Carvalho & Gomes, 2003). A survey of some of the over one million Canadians who have used online dating services found that 89% of these people reported that a major advantage of using online dating services was that they met people who they otherwise would not have met (Brym & Lenton, 2001). Overall, these studies suggest that the Internet is an important source of erotica and a supplemental way of meeting new people. This second conclusion fits with studies of the Internet in other areas as it supplements rather than replaces face-to-face and phone connections among people (Wellman, Quan-Haase, Witte, & Hampton, 2001; Wellman, Quan-Haase, Boase, & Chen, 2002). In conclusion, the overall evidence suggests that the Internet supplements traditional sexual behaviour patterns rather than altering them. While this is an important change, it is not a revolution.

Despite a very open formulation and weak empirical support, Cooper and colleagues' claim that the



Internet's "Triple-A Engine" is turbocharging a sexual revolution has been used as a guide to research (e.g., the articles in Cooper, 2002). The underlying plausible claim is that the introduction of Internet technology and how people relate to and use it will generate substantial changes in people's sexual behaviour. Central to people's ways of using the Internet is ease of access, a lack of concern about the affordability of material being accessed and a feeling of being anonymous online.

Ideally, to test the impact of the Internet on sexual behaviour one would need to compare many dimensions of sexual behaviour of a randomly selected sample of Internet users with a comparable sample of non-Internet users. However, today the Internet is in widespread use. Thus, for instance in 2003, 71% of Canadians had accessed the Internet in the past 30 days (Ipsos-Reid, 2004) and 64% of Canadian households have at least one member who uses the Internet regularly (Statistics Canada, 2004). Thus, if a random sample was selected and Internet users were compared with non-Internet users, the groups would be seen as different simply because of their Internet use or non-use, even if standard demographic controls were used. Consequently, we chose to test for the Internet's impact on sexuality by comparing the sexuality of people with different computer/Internet patterns. We tested for the time people spend online expressing themselves sexually by viewing SEMI and sending sexually explicit email. We chose to focus on this subset of OSA as the claim that the "Triple-A Engine" is producing a major change in sexuality suggests that an appropriate test focuses on people being sexual directly rather than other activities included in OSA such as researching sexual health topics.

Our Internet-based study was conducted with a group largely composed of the first generation to have grown up with the World Wide Web: students at an English Canadian university. If the "Triple-A Engine" and other technological variables are causing a revolution, then variations in these sorts of variables should produce substantial variation in the amount of SEMI viewed and sent. The computer variables examined are skill level, as an indicator of access, level of privacy, both real and perceived as a measure of anonymity, and Internet experience measured both

by the number of hours per week they currently use the Internet and the length of time since the person started using the Internet. To provide context for the strength of the impact of variations in the computer variables, we compared their impact controlling for gender and the use of non-Internet pornography with their impact without these controls.

HYPOTHESES

Our first hypothesis focuses on accessibility. Improved Internet skills allow people to access and/or send more easily a wider range of SEMI. Thus our first hypothesis is:

H1. As self-rated Internet skill level increases, the time spent viewing and sending SEMI will increase.

Our next hypothesis focuses on the role of anonymity. The logic is that if people have their own private computers, then this control of access provides greater opportunity to access SEMI anonymously than if they share access with others. Shared access includes both sharing a computer with others at home or work and accessing the computer in a public space such as the university library.

H2. People who control access to their computers will view and send more SEMI than people who do not control access.

The third hypothesis focuses on self-perceived anonymity online. There are many ways a person's online activity can be monitored and people vary in their concerns about threats to their anonymity (See Witmer, 1997 for a discussion of what leads computer bulletin board users to engage in risky OSA).

H3. The greater a person's self-perceived privacy or anonymity online, the more he or she will view and send SEMI.

Our fourth and fifth hypotheses deal with the extent of people's Internet experience measured currently (how much they use the Internet now) and historically (how long they have been online). Increased experience could impact Internet sexuality several ways. First, the more experience people have with the Internet, the more likely they are to be comfortable with the medium and thus feel comfortable being sexual on the Internet. The best



predictor of overall Internet activity is the length of time a person has been online. The explanation offered is that experience generates both skill and comfort (Wellman, Quan-Haase, Witte, & Hampton, 2001, pp. 442-443). While in our sample time spent online per week correlates with self-rated skill ($r = .314$) and years online ($r = .185$) (see Table 3), there is substantial independence. Thus, independent of skill, experience could lead people to be more comfortable with the medium. Secondly, the more experience people have with the Internet the more likely they are to develop a pattern of being distracted by OSA in general and viewing and sending SEMI in particular.

H4. People who are online a longer time per week will view and send more SEMI than those who are online for a shorter time.

H5. People who have had Internet access for a longer time will view and send more SEMI than those who have had access for a shorter time.

Finally, to examine the relative importance of Internet variables in determining how much SEMI a person views and sends, we examined the role of gender and consumption of non-Internet pornography. As we see the social milieu to be critical for understanding sexual behaviour, we predict these variables will have a significant impact on SEMI. Gender has a well known link to pornography. Males are substantially more likely to view sexually explicit material than females (Laumann, Gagnon, Michael, & Michaels, 1994, pp.134-141). While gender is clearly antecedent to Internet use, and thus an independent variable, the time spent consuming non-Internet pornography could be affected by a person's Internet experience. We treat consumption of non-Internet pornography as an independent variable as we see it as a measure of a person's general propensity to consume pornography. This propensity, we believe, derives largely from an individual's personality, social location and cultural preferences with regard to sexuality, not their Internet experience. In laboratory experiments when males were given access to a variety of Internet sites including some pornography sites, the best predictor of time spent on pornography sites was time spent before the experiment on non-Internet sexually explicit

materials (Barak, Fisher, Belfrey, & Lashambe, 1999, p. 82). Goodson, McCormick, and Evans' study (2001) found a correlation between accessing sexually explicit material online and viewing adult magazines ($r = .49$) and viewing offline adult videos ($r = .50$). In Boies' (2002) study viewing offline sexually explicit material was a strong predictor of all OSA.

H6. Gender will have a significant impact on the quantity of SEMI viewed and sent. We predict that males will spend more time viewing and sending than females, holding constant the technological variables.

H7. Consumption of non-Internet pornography will predict the quantity of SEMI, holding constant the technological variables.

METHODS

PROCEDURE AND INSTRUMENT

After receiving ethical approval from the University's Ethics Board, students in 24 undergraduate sociology, anthropology, philosophy and computer science classes were invited to go to a university department website and fill in an Internet questionnaire. Calling cards with the website address were distributed in these classes, and students were asked to pass them on to friends after they had used them. This process generated 526 respondents who participated in an online questionnaire. Data for the survey were collected between October 1, 2003 and November 3, 2003.

To ensure informed consent, the introduction outlined the nature of the survey, gave assurances of confidentiality and anonymity, and stressed that the respondent was a volunteer who could withdraw at any time. Respondents had to be 19 or older. Twenty respondents who answered that they were younger than 19 were branched immediately to the end of the questionnaire. Branching the questionnaire also enabled us to avoid asking questions to people for whom these questions were irrelevant. For instance, people who said that they did not access live cam sites were not asked how long they spent doing this. Thus branching enabled us to avoid unnecessary questions about possibly upsetting topics and shortened the questionnaire without loss of information.



The self-report questionnaire began by asking questions about basic demographic information (e.g., gender, age, sexual orientation and relationship status). Using Likert-type scales, the survey included questions about computer skills and Internet access which were followed by questions about the respondents' viewing and sending of SEMI. The final questions asked how open people were about their SEMI and whether it was a concern to themselves or others.

In addition to dropping 20 people who were under age 19, we eliminated 41 respondents who did not provide information on technological variables, as this was central to our analysis. Two respondents were dropped as they filed from the same IP address within 10 minutes of entry. These were thought likely to be duplicate responses. Seventeen people claimed to be viewing SEMI for more than an hour more than they claimed to be using the Internet. We took this as evidence that the respondents were not taking the survey seriously and deleted them from the survey. An additional 12 people claimed to be viewing SEMI for an hour more than they were on the Internet. We treated this as an honest mistake and kept them in the sample. We have run the regression with and without these individuals and their inclusion does not change any of the relationships. Finally, since only

three respondents answered they were transgendered, they were removed from the survey. These eliminations reduced the sample from 526 to 443.

MEASURES

The measures of all variables used in the analysis are contained in Table 1. The first five are the independent variables used to measure various aspects of people's use of Internet technology and their experience with this technology. These are followed by two non-technological computer use variables. The dependent variable is displayed in the last row.

The first variable is *Internet skill*, based on a single question which asked participants to rank their general Internet skill on a seven point Likert-type scale. This is followed by a dummy variable, *access*, which measured anonymity of access. People who have sole use of a computer and thus had nobody who could easily find out how they spent time online were contrasted with people who share computer access.

The *privacy* variable is based upon responses to a question asking what level of privacy a respondent felt while online. This is measured on a five point Likert-type scale.

Table 1 Variable Definitions and Descriptions

Variable Name	Variable Label and Description	Variable Coding and Descriptive Statistics
Internet skill	Self-reported Internet skill level	7-point scale (1 = low; 7 = high) 5.07 (mean), 1.13 (sd)
Access	Shared or sole access to computer	Shared = 1 (25.8 %); Sole = 0 (74.2%)
Privacy	Perceived level of Internet privacy	5-point scale (1 = low; 5 = high) 2.9 (mean), .95 (sd)
Hours OL/wk	Time /week OL (excluding SEMI)	16.4 hrs. (mean), 2.35 (sd)
Years online	Number of years online	6.6 (mean), 2.2 (sd)
Non-Internet pornography	Hrs./wk of non-Internet pornographic material	.42 hrs./wk (mean), 1.7 (sd)
Gender	Gender of respondent	0 = male (35.2%); 1 = female (64.8%)
SEMI	Composite dep. var. measuring weekly Internet sending and viewing of sexually explicit e-mails; stills; live cam; movies; stories.	2.1 hrs./week (mean), 5.3 (sd)

To construct the first experience variable, *time online*—except time viewing or sending SEMI—we started with the respondent's estimate of how many hours he or she spent online per week, and then deducted the time the person claimed to spend viewing or sending SEMI (our dependent variable). Our survey question asked, "How many hours are you online per week?" Thus, we do not know how actively respondents are using the Internet. The respondent could be online, available if an email comes in but using the computer for other purposes such as word processing. At the university where the survey was conducted the student residences have high speed Internet access, so a person could be online without tying up the phone. The second experience variable, *years online*, relies on answers to a question about the number of years that a respondent had been using the Internet. The next two variables in this table are *gender* (a dummy variable) and *non-Internet pornography*. Measuring this variable was based on how many hours a respondent spent (on a weekly basis) using or looking at such material that was not on the Internet. The term "non-Internet pornography" is being used in this paper because our survey asked respondents "how much time do you spend using or looking at pornographic material—not on the Internet?" While we do recognize that this use of language is prone to differences of interpretation, the term "pornography" is culturally well recognized in Canadian society and sexually explicit material would appear less familiar. We assume that in our sample pornography was interpreted as the rough offline equivalent of viewing SEMI.

The final variable in Table 1 is the composite dependent variable *SEMI*. This variable is constructed by adding the amount of hours (per week) that a respondent claimed to spend online viewing websites containing sexually explicit images, stories, movies and/or live cams and sending sexually explicit emails. In calculating the number of hours of SEMI viewed per week by individual respondents, we made relatively conservative assumptions in assigning hours to each of the responses categories offered. Categories and assigned hours (in brackets) are as follows: (a) very little time, I do this less than once a month (0.1 hours/week); (b) less than one hour/week (0.3 hours/week); (c) 1-5 hours/week (2.5 hours/

week); (d) 6-10 hours/week (8 hours/week); (e) 11-15 hours/week (12.5 hours/week); (f) 16-20 hours (18 hours/week); (g) 21-25 hours/week (23 hours per week); and (h) more than 26 hours/week (26.1 hours per week). Our estimates of time spent on SEMI should be viewed as tentative (see Discussion for elaboration).

In our measures of SEMI, what counted as sexually explicit was defined by the respondent. Cooper and Griffin-Shelley (2002b) define OSA as "the use of the Internet for any activity (including text, audio, graphic files) that involves sexuality for the purposes of recreation, entertainment, exploration, support, to obtain and secure romantic partners, and so on" (p. 3) (See also Cooper, Månsson, Daneback, Tikkanen, & Ross, 2003, p. 278). Our operationalization of SEMI is a subset of this. As is indicated by measures of central tendency or the percentage breakdowns of the dummy variables, all variables in Table 1 contain substantial variation.

RESULTS

On the basis of gender, the sample is generally representative of the University where the questionnaire for the study was advertised (60%

Table 2 Sample Characteristics

Gender	
Female	64.8%
Male	35.2%
Sexual Orientation	
Heterosexual	91.6%
Gay	2.2%
Lesbian	0.9%
Bisexual	5.3%
Student Status	
Student	91.6%
Non-Student	8.0%
Other	0.4%
Computer Owners	97.2%
Regular Access to Internet	99.4%
Mean Age	20.7
Mean Years Using Internet	6.6 years
Mean SEMI hours/week	2.1 hours
Percent of sample who do SEMI >11hrs/wk	3%



Table 3 Correlations Between All Variables Used in the Analysis (n = 324-443)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Netskill							
(2) Access	-.114*						
(3) Privacy	.174**	-.122*					
(4) Hrs OL	.370**	-.115*	.169**				
(5) Yrs OL	.196**	-.067	-.034	.187*			
(6) Gender	-.221**	-.129**	-.101	-.152**	.054		
(7) NonNet porn	.033	-.024	.021	.130**	-.060	-.207**	
(8) SEMI	.205**	-.069	.049	.310**	.019	-.387**	.300**

* Correlation is significant at .05 level (two tailed); ** = .01

female and 40% male). Just over 90% of the sample was students. We have tested our model using just students and just students from the university where the survey was promoted. No important differences were found in the key relationships among our variables, so we have chosen to report data from the complete set of respondents. A question measuring sexual orientation indicates that 91.6% reported themselves as "heterosexual". Ninety-seven percent were computer owners, and 99% had regular access to the Internet. The sample also had considerable computer experience. The mean number of years of Internet access is 6.6 years. Respondents were confident of their Internet skills as fits a sample which is composed largely of the first generation that has grown up with the Internet. Finally, the average amount of SEMI consumed per week was 2.1 hours. And 3% of respondents spent more than 11 hours per week on SEMI.

We tested our hypotheses by examining first bivariate relationships, and then net effects through a two-step OLS regression.

At the bivariate level, self-rated Internet skill was significantly related to quantity of SEMI viewed. Thus, the access hypothesis (H1) is supported. Objective anonymity made no difference to the quantity of SEMI viewed. Similarly, subjective estimates of privacy made no statistically significant difference in SEMI viewed. One of the Internet experience hypotheses is supported, however. Hours per week spent online does predict SEMI, though years online does not. Men were engaged in significantly more viewing of SEMI than women,

and people who viewed more non-Internet pornography material also viewed substantially more SEMI.

In sum, at the bivariate level, self-rated Internet skill, hours per week online and using non-Internet pornography are positively related to SEMI. We also found that males were more inclined to view and send SEMI than females. The median time spent viewing and sending SEMI per week was 2.8 hours for males and 0.2 hours for females.

Before reaching any firm conclusions we examined these hypotheses while statistically controlling for all variables used in the analysis. This involved a two-step OLS regression, which is presented in Table 4. In the first model, only the technological variables are entered in the equation against the dependant variable. In the second model, the variables non-Internet pornography and gender are added to the technological variables from model one. Hours per week online is the only technological variable that is statistically significant in Model 1. In Model 2, where two non-technological variables are added, hours online remains significant. Its impact is more powerful than that of non-Internet pornography, but less powerful than that of gender both of which were significant predictors of SEMI. Our data also shows that the impacts of gender and use of non-Internet pornography are substantially independent forces. Both males and females who regularly consumed non-Internet pornography were more likely to consume SEMI material. In fact, for males who consumed non-Internet pornography two or three times a week and over, the mean level of consuming SEMI was 5.2 hours/week versus 1.9 hours/week for

Table 4 OLS Regression of Composite Dependent Variable (SEMI)

	Model 1		Model 2	
	Beta	SE	Beta	SE
Netskill	.107	.235	.013	.224
Access	-.016	.597	-.056	.552
Privacy	-.021	.276	-.044	.253
Hrs/wk OL	.289***	.025	.241***	.023
Yrs OL	.076	.128	-.028	.118
Gender			-.314***	.521
NonNet porn			.215***	.132
	R ² .112		R ² .266	

* $p < .10$; ** $p < .01$; *** $p < .001$

males who consumed non-Internet pornography less than once a month. For females, the corresponding figures were 1.7 hours versus 0.6 hours.

DISCUSSION

Our analysis shows that variation in how people use Internet technology accounts for some variation in SEMI viewing and sending. Affordability was not included in our hypotheses as less than 5% of people in our sample paid for SEMI. This suggests that Cooper and associates are correct in asserting that cost is not a barrier to OSA, so long as the people can afford Internet access. SEMI appears to be readily accessible. Increased Internet skill was not related to SEMI viewed. The skills required for sending sexually explicit emails or locating SEMI are very basic Internet technology skills. These skills are ubiquitous among Canadian university students. It is possible that for other forms of OSA or for populations which have fewer Internet skills than university students, that skill level may be important to OSA. Anonymity, whether measured objectively as control of one's Internet access or subjectively as feeling of privacy online, has no impact on SEMI viewed or sent. The central component of Cooper and colleagues' "Triple-A Engine" did not make any difference to how our sample expressed themselves sexually online.

The extent of Internet experience when measured in terms of current extent of use does make a difference to how much SEMI is viewed. The difference is

substantial. It is larger than the impact of how much non-Internet pornography was viewed. The most plausible accounts are those offered when H4 and H5 were presented. The first is that experience online generates comfort with the milieu which makes people expressing themselves sexually feel more natural. Secondly when people stay online longer they become more likely to develop a pattern of viewing SEMI and sending erotic emails as a distraction from their other online activities. A study of people using an American news portal found that 81% of men and 59.4% of women gave distraction as a reason for OSA and 60.3% of men and 36.5% of women gave it as their primary reason for OSA (Cooper, Morahan-Martin, Mathy, and Maheu, 2002, pp.109-110). A study of users of an online portal of an American news organization found 81.6% of people gave distraction as a reason for OSA (Cooper, Griffin-Shelley, Delmonico, & Mathy, 2001, p. 274). Of the 20% of this sample that went online at work for OSA, 55% gave distraction as a reason for doing so (Cooper, McLoughlin, Reich, & Kent-Ferraro, 2002, pp.110-111).

Our results appear compatible with Fisher and Barak's (2000; 2001) use of sexual behaviour sequence theory (Byrne, 1977; Fisher, 1986) to provide a theoretical integration of the Internet's impact on sexuality. They see people as either erotophilic (tending to respond to sexual cues with positive affect and evaluations) or erotophobic (tending to respond to sexual cues with negative affect and evaluations). Stimuli such as Internet sex shops strengthen prior inclinations. For erotophilics, this implies that their previous patterns of sexual arousal are strengthened and expanded. Based on the assumption that usually intrinsically rewarding sexual experiences will occur to make people more positive about sex, Fisher (1986) expects most people in the middle of the erotophilic-erotophobic range to move towards erotophilic end (p. 136). Spending longer online provides people with more time to have pleasurable online sexual experiences, and thereby develop a pattern of spending more time engaging in OSA in general and viewing and sending SEMI in particular. Fisher and Barak's (2000; 2001) theoretically sophisticated integration of how the Internet impacts sexuality also implies that the Internet will expand most people's expression of their



sexuality on the Internet within the pattern set by their prior socialization. So far, this fits the evidence (e.g., Boies 2002; Cooper, Morahan-Martin, Mathy, and Maheu, 2002).

The two non-technological factors which we included in our analysis - gender and non-Internet pornography - confirm the results of previous studies. Boies (2002) found among Canadian psychology students that 72% of males, but only 24% of females had viewed SEMI. Viewing this material, forwarding it to others, and receiving it from others were all statistically significantly related at the .001 level to viewing offline sexually explicit material. Goodson, McCormick and Evans (2001) found men roughly three times as likely as women to access SEMI. As noted earlier, accessing SEMI correlated .49 with viewing adult magazines and .50 with viewing offline adult videos. In Cooper, Morahan-Martin, Mathy, and Maheu's (2002) study, men engaged in 2.83 hours of OSA compared with 1.36 hours for women.

Finally, in our sample, 3% claimed to view and send SEMI for 11 or more hours per week. This fits with previous studies that found low proportions of people reporting substantial time engaging in OSA. For instance, Cooper, Delmonico, and Burg (2000) report that sexual compulsives are characterized by spending 11 or more hours per week engaging in OSA and that this group constituted 8% of their American Internet portal sample. Boies (2002) reports that 5.9% of his Canadian psychology student sample reported viewing sexually explicit material daily (p. 82).

CONCLUSION

Cooper and his associates claim the Internet's "Triple-A Engine" is "turbocharging" a sexual revolution, but leave open what form the sexual revolution will take. This claim has proved influential as it rests on plausible contentions about how the "Triple-A Engine's" technological variables of access, affordability and anonymity are generating change in people's OSA. If these contentions are correct, then people who vary on these uses of technology dimensions should vary in their sexual patterns, particularly online. We have tested empirically whether variations in two of the three

Triple-A factors impact the amount of time students at an English Canadian university spent expressing themselves sexually online. Access measured by skill level and anonymity measured objectively and subjectively made no difference in the time spent on SEMI.

One technological factor, time spent online per week, affected SEMI. The most plausible account is that regularly spending time online generates comfort with the medium which makes people feel that expressing themselves sexually is more natural. In addition, the more time people spent on the Internet, the more likely they were to seek out SEMI as a distraction from their other activities. This impact was substantial as it was greater than the impact of non-Internet pornography, though less than that of gender. Our study found the non-technological variables of gender and non-Internet pornography consumption had a substantially greater impact on SEMI than all but one of the technological ones. This, combined with the technological variable working probably through distraction, suggests that contemporary society's pattern of sexuality, not its Internet technology will be the dominant determinant of our future sexual patterns.

Our results continue a trend apparent in the work of Cooper and associates. As they move from theoretical speculation based on limited data to research based on wide cross sections of the population, the claims have become more restrained. For instance in Cooper, Månsson, Daneback, Tikkanen, and Ross's (2003) study of Swedish users of a major Internet portal, we find a language shift. Instead of assertions of a sexual revolution we find the more cautious claim that the Internet is a "powerful medium for OSA" (p. 277). In a book edited by Cooper (2002), the chapter on women and Internet sexuality by Döring and Lieblum concludes by saying that the Internet "may have far reaching consequences" (p. 43). However, their discussion of women's online OSA's is grounded in careful observation. Women's OSA is described as using the Internet largely to search for sexual health information and to send sporadic erotic emails to lovers. This pattern they note "would be unlikely to endanger or enrich the sexuality of the user. At the collective-societal level, revolutionary radical changes for women would not be expected" (p. 24).

Our study suggests that the “Triple-A Engine” is not producing sexual change and thus is not powering a sexual revolution. We have tested the impact of technology on people expressing themselves sexually on the Internet, the primary component, at least by time, of most people’s OSA, and a central concern of Cooper and his associates. Such activity is only one possible impact of Internet technology on sexuality.

Our conclusion must be seen as tentative as our study tested for and was only able to use estimates from categorical ranges in time spent sending and viewing SEMI. Respondents who spent time reflecting on the specific activities that comprised our composite-dependent variables may have generated more honest or more inflated estimates of time spent on SEMI; we have no way of knowing which is the case. In addition, respondents may have thought about SEMI as a general category of activity and thus failed to remember the exact activity in which they were engaging (e.g., viewing a movie or visiting a live cam site). This could have resulted in their conflating the time they spent on each activity, thereby overestimating the total time spent. Until researchers monitor actual Internet usage in natural settings, or by employing time budget surveys, figures on SEMI and OSA should be viewed with caution. We note here, however, that the key to our analysis is the relationships among the amounts of SEMI viewed. These relationships are much less affected by the assumptions.

In addition our assumption that “pornography” not on the Internet was interpreted by our sample as the offline equivalent of SEMI is untested. Moreover, since our study was limited in that it focused on English Canadian university students who may have been interested in and thus engaged in more SEMI as a consequence of our recruitment through promoting the survey in classes, future research with a more representative sample of the population is required to more systematically sort out the relative impact of Internet technology on sexuality.

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