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STATE OF WISCONSIN : CIRCUIT COURT : MANITOWOC COUNTY

STATE OF WISCONSIN,	)	
	)	
Plaintiff,	)	
	)	Case No. 05-CF-381
v.	)	
	)	Honorable Judge Angela Sutkiewicz,
STEVEN A. AVERY,	)	Judge Presiding
	)	
Defendant.	)	

AFFIDAVIT OF ANN BURGESS, DNSc.

Now comes your affiant, Ann Burgess, Ph.D., and under oath hereby states as follows:

1. I am of legal majority and can truthfully and competently testify to the matters contained herein based upon my education, experience, and training in the field of psychiatric nursing. All of the opinions offered within this affidavit are based upon a reasonable degree of scientific certainty in the field of psychiatric nursing.
2. I have been recognized by courts as an expert in the areas of child pornography, crime classification, offender typology, rape victims, rape trauma, and serial offenders. Attached and incorporated herein as Exhibit A is a copy of my curriculum vitae.
3. I have published extensively, including co-authoring 24 books, 30 book chapters, and over 164 peer-reviewed articles. The most relevant books to the issues in the Steven Avery case are *Sexual Homicide: Patterns and*

EXHIBIT
Group 9

Motivations, *The Crime Classification Manual*, *Understanding Violence Against Women*, *Violence Through a Forensic Lens*, and *Forensic Science Lab Manual*. The most relevant articles are listed in my CV, including: "The presumptive role of fantasy in serial sexual homicide" in the American Journal of Psychiatry, and "Internet Patterns of Federal Offenders" in the Journal of Forensic Nursing.

4. I was retained by the law firm of Kathleen T. Zellner and Associates, P.C. to review materials prepared by computer forensic analyst Gary Hunt ("Mr. Hunt"), including Motion to Supplement **Exhibit** 8, which extracted, categorized, and documented the violent pornographic images, word and internet searches for pornography and deceased and dismembered female bodies, and sexual MSN messages that were sent to under-age females. It is my understanding that all of this evidence was found on the Dassey computer and preserved in 7 DVDs containing a forensic image of the computer, and a CD containing a forensic analysis performed by Detective Michael Velie of the Grand Chute Police Department.

5. I am familiar with, and have reviewed, the most current literature on the relationship between pornography consumption and violent behaviors. Attached incorporated herein as **Exhibit** B is a sample of 5 key articles of 30 years of empirical research that clearly establishes the relationship between pornography consumption and rape and other violence towards women.

6. A recent meta-analysis by Wright, Tokunaga, and Krause (2016), analyzing 22 studies from 7 different countries, revealed that pornography consumption

was associated with sexual aggression in both men and women in the United States and internationally.

7. Both experimental and non-experimental studies have confirmed the relationship between pornography and violence. Experimental studies have shown that male participants who are exposed to pornography endorse increased rape fantasies, willingness to rape, aggression against females, and acceptance of rape myths. (Allen, De'Alessio, & Brezgel, 1995; Malamuth et al. 2000). Further, a meta-analysis by Hald, Malamutu, and Yuen (2010) showed a significant positive association between pornography use and attitudes supporting violence against women in non-experimental studies.
8. Use of sexually violent pornography as well as acceptance of interpersonal violence against women has been shown to be related to self-reported likelihood of raping or using sexual force (Demare, Briere, & Lips, 1988).
9. According to a survey conducted at a rape crisis center, almost a third of women who had been raped indicated that their abuser used pornography (Bergen & Bogle, 2000).
10. In the book *Sexual Homicide: Patterns and Motives*, which I co-authored with FBI Agents Robert K. Ressler and John E. Douglas, one chapter focused on "Preoccupation with Murder: Pattern Responses." As a part of this chapter, we interviewed 36 sexual murderers and we concluded that, as a group, they had several traits in common: 1) They had a long standing pre-occupation and preference for a very active fantasy life; 2) They were preoccupied with violent, sexualized thoughts and fantasies. In my opinion, in reviewing Mr.

Hunt's affidavits, the obvious preoccupation with violent pornography, which includes torturing young females and dismembering and/or mutilating female bodies, overtime would result in a "justification for killing." (*Sexual Homicide: Patterns and Motives*, p. 35).

11. My opinion is based, in part, upon a review of sexual images contained in the Dassey CD and 7 DVDs, Mr. Greg McCrary's Second Supplemental Affidavit (**Motion to Supplement Exhibit 24**), and Mr. Hunt's analysis of the internet searches, including the timing and frequency of the searches, as well as description of the violent pornographic images.

12. I agree with Mr. McCrary that law enforcement should have considered that the Teresa Halbach murder was a "sexually motivated homicide." (**Exhibit 24**, ¶ 9). The Dassey computer examination by Mr. Hunt also revealed that Bobby Dassey ("Bobby") was untruthful when he testified that he had been asleep on October 31, 2005 until 2:30 p.m. I also agree with Mr. McCrary that Bobby should have been considered "a prime suspect because of his untruthful statements during the investigation, combined with the nature of his internet searches." (**Exhibit 24**, ¶ 9).

13. Specifically, Mr. Hunt describes the following categories of searches:

    a. 22 search terms describing forcing sex toys and objects into vaginas;

    b. 37 searches for terms describing violent accidents, specifically violent car crashes with images of dead bodies;

    c. 13 searches for terms describing drowned, dead, or diseased female bodies;

d. 65 searches for terms describing the infliction of violence on females. including fisting and images of females in pain.

14. Further, Mr. Hunt determined that 562 of searches were performed on 10 weekdays: 8/16/2005 (4 searches); 9/13/2005 (12 searches); 2/23/2005 (48 searches); 3/29/2006 (37 searches); 3/30/2006 (23 searches); 4/3/2006 (93 searches): 4/5/2006 (96 searches); 4/6/2006 (14 searches); 4/13/2006 (39 searches); 4/19/2006 (196 searches). Mr. Hunt described folders created on the Dassey computer entitled, "Teresa Halbach," "Steven Avery," and "DNA."

15. The Dassey computer reveals significant searches for teenage pornography. It is my understanding that, under Wisconsin law, that the person performing these searches would be in violation of the Wisconsin statute governing child pornography (W.S.A.948.12). The CD contains references to these child pronography images (AverySupp 00028-30, 36, 43, 45, 46, 47, 48, 49, 86, 127, 148, 154-58, 160-190, 193, 213, 214-16, 219, 270, 286, 288-90, 297, 302, 340, 366, 395-96, 410, 414, 419, 429, 439-40). The CD contains numerous references to teenage pornography. (AverySupp 807-10, 813, 818, 830, 920-22, 924, 927, 933, 944, 945). The CD also contains conversations between Bobby and 14 and 15 year old girls. Bobby identifies himself and states that he is 19 years old. The conversation has explicit sexual content. (Hunt 51-55). Additionally, in that conversation, Bobby asks that the girls "flash" him using a webcam. (Hunt 54). The searches speak to the compulsive nature of the offender, specifically the sadism as the fantasy life translates into the compulsion to act out the sadistic fantasy. e.g., a sexual

homicide. A person obsessed with violence is more likely to commit a murder than someone not so obsessed.

16. The images on the CD also contain blindfolded (AverySupp 103) and bound (AverySupp 78, 116-17, 395, 435) girls, dismembered bodies (AverySupp 247), and bestiality (AverySupp 315). All of these images display a fascination with dominance, control, and mutilation, which is characteristic of many sexual homicides. The mutilation of Ms. Halbach's body is consistent with a fascination with the morbid images found on the Dassey computer of dead and dismembered human bodies.

17. I have also reviewed Steven Avery's second supplemental affidavit, which is **Motion to Supplement Exhibit 11**, in which he describes Bobby commenting on Teresa Halbach after each appointment that she had at the Avery Salvage Yard. Specifically, Mr. Avery says that Bobby would say, "I see that your girlfriend was here again." Since Bobby was never present when Ms. Halbach was on the property, Mr. Avery concluded that he must have been watching her from a window. Clearly, Bobby had developed an unhealthy obsession with Ms. Halbach. It is also significant that Bobby has always maintained that he did not know that Ms. Halbach was coming to the property, but there is a conflicting report from the Wisconsin Public Defender Office dated November 23, 2005 in which Bobby admitted that he knew Ms. Halbach was coming to the property that day. (**Motion to Supplement Exhibit 10**).

18. The Dassey computer examination by Mr. Hunt revealed 8 significant periods of deletions related to the times that Ms. Halbach visited the Avery property.

(Exhibit 24, ¶ 7). It is not unusual for an organized offender would try to cover up his fantasies by deleting files from a computer. Furthermore, I agree with Mr. McCrary that it is "highly significant in any investigation if there is an attempt to delete or destroy records." (Exhibit 24, ¶ 7). Clearly, the person deleting or destroying records has to be considered as a suspect in any homicide investigation.

19. The offender in the Halbach murder would be classified as an organized offender who plans, thinks things through and tries to cover his tracks by deleting incriminating files, interjecting himself into the investigation as a primary witness for the State, misleading the investigators about the timeline and events surrounding the murder, and would be very likely to attempt to plant evidence and frame another for the murder. The offender would keep secret his commission of the sadistic murder of Ms. Halbach.

20. The police should have considered Bobby a prime suspect in the murder of Ms. Halbach and should not have eliminated him as quickly as they did.

FURTHER AFFIANT SAYETH NAUGHT

Ann Burgess

Ann Burgess

State of Massachusetts
County of Suffolk

Subscribed and sworn before me
this 5 day of July, 2018.

LAWRENCE J BAILEY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
July 22, 2022

ANN WOLBERT BURGESS
Curriculum Vitae

Office address:
228 Highland Avenue
West Newton, MA 02465
617-965-6261
Fax: 617-244-2324
burges@bc.edu

Academic Address:
Boston College School of Nursing
140 Commonwealth Ave.
Chestnut Hill, MA 02467
617-552-6133
burges@bc.edu

EDUCATION

Bachelor of Science	Boston University
Master of Science.	University of Maryland
Doctor of Nursing Science	Boston University
Doctor of Humane Letters (Hon)	University of San Diego

REGISTRATION AND CERTIFICATION

Registered nurse/PC: Massachusetts license #:71027; Controlled Substances Practitioner #:MB0204115L; Pennsylvania license RN-258646-L
American Nurses Association Certification as a Clinical Specialist in Psychiatric-Mental Health Nursing #6057, 1980-
Sexual Assault Nurse Examiner, 1995-

PROFESSIONAL EXPERIENCE

Academic Appointment

2014-2016 Visiting Professor, Uniformed Services University of the Health Sciences
2001- Professor of Psychiatric Nursing, Boston College
1983 - 2000 van Ameringen Professor of Psychiatric Mental Health Nursing, University of Pennsylvania, School of Nursing; Chair, Psychiatric Nursing 1990-1995; Professor Emeritus, 2000-
1979 - 1982 Professor and Director of Nursing Research, Boston University School of Nursing;
Adjunct Assistant Professor (1966-1969); Instructor (1961-962)
1976 - 1979 Professor of Nursing, Boston College
Associate Professor and Coordinator of Graduate Community Health Nursing (1975-1976); Associate Professor (1971-1975);
Adjunct Assistant Professor (1969-1971)

Research positions

1981 - 1993 Associate Director of Nursing Research, Department of Health and Hospitals,City of Boston
1965 - 1966 Research Nursing Supervisor, Metabolic Depression Unit, Mass. Mental Health Center, Mass.
2012 Nurse Scientist, Liaison with Newton-Wellesley Hospital, Newton, MA

Administrative positions

1976-1980 Chairperson, Department of Nursing, Graduate School of Arts & Sciences, Boston College

1980 - 1981 Dean ad interim, Boston University School of Nursing
1990 - Chairperson, Division of Psychiatric Mental Health Nursing, University of Pennsylvania

Nursing Service
1959 - 1961 Clinical nursing instructor, Spring Grove State Hospital, Baltimore, MD
1958 - 1958 Staff nurse, Newton-Wellesley Hospital, Newton, MA

Private Practice: 1966 - Individual and couples psychotherapy
Forensic Nursing Evaluations and Reports: 1979-

MEMBERSHIPS AND PARTICIPATION IN PROFESSIONAL ORGANIZATIONS
American Nurses Association, 1966 - .
ANA Council of Specialists in Psychiatric-Mental Health Nursing, 1972 Nominating Committee, 1974-1976, Executive Committee, 1978- 1980.
ANA Cabinet of Nursing Research, 1982-1988; Member, Private Sector Funding 1982-1985; Chairperson 1986-1987.
American Academy of Nursing, 1977; Governing Council, 1978-1980; Program Committee, 1978-1980; Chair, 1980; Sigma Theta Tau, 1957; Research Committee, 1983-1985; Chair, Expert Panel on Violence, 1997-
American Orthopsychiatric Association, Member 1975-1979; Fellow, 1979 - ; Board of Directors, 1982-1984.
National Organization of Victim Assistance, 1976 - Board of Directors, 1977-1979.
The Society for Traumatic Stress Studies, 1985; Vice President, 1985 -1988.
American Professional Society on the Abuse of Children, Board of Directors, 1988-1990.
International Association of Forensic Nurses, Advisory Board, 1993-1997; member 1993-
National Academy of Sciences, Institute of Medicine 1994
American College of Forensic Examiners, Member 1997- present; Chair, Forensic Nursing Advisory Board, 1998-2000.
Forensic Panel, 1999-
Cyril H. Wecht Institute of Forensic Science and the Law, 2003-
Board of Visitors, University of Scranton, 2006-2008

Court Recognized Areas of Expertise
Rape trauma; Rape trauma in trusted relationships; Elder abuse; Relationship violence; Child pornography; Child sexual abuse; Posttraumatic Stress Disorder; Crime classification; Infant and child abduction; Offender typology; Serial offenders; Profiling; Mental illness; Standards of practice; Neurobiology of trauma.

GRANTS
MH 11499 - Mental Health Concepts in Public Health Nursing, National Institute of Mental Health, Project Director, 1971 - 1973.
90-CA-8101 - Research on the Use of Children in Pornography, National Center for Child-Abuse and Neglect, Principal Investigator, 1980 - 1982, $100,000.

6244 - Demonstration to Increase the Rate of Return to Work of Heart Attack Victims, Robert Wood Johnson Foundation, Principal Investigator, 1981 - 1984, $589,678.
2-0283-0-MA-IJ - Sexual Homicide Crime Scene Data, National Institute of Justice, Principal Investigator, 1982 - 1984, $127,835.
84-JW-AXK010 - Possible Linkages between Sexual Abuse and Exploitation of Children and Juvenile Delinquency, Violence and Criminal Activity, Department of Justice, Principal Investigator, 1984 - 1986, $844,839.
90-CA-1273 - Children as Witnesses in Cases of Child Sexual Abuse, National Center on Child Abuse and Neglect, U.S. Department of Health and Human Services, Co-Principal Investigator with Ellen Gray, National Council of Jewish Women, 1986-89, $150,000.
5 TO1 MH 18611-02 - Clinical Training on Child Abuse Cases for Graduate Nursing Students in Psychiatric Mental Health Nursing, National Institute of Mental Health, Project Director, 1986-87, $41,000.
96-MC-CX-K003 - National Center for Missing & Exploited Children. Monograph on Abducted and Sexually Exploited Children. Project Director, 1987, $12,000.
A Working Meeting: AIDS, Ethics and Sexual Assault, NIMH Special Projects, August - September, 1987, $9,980.00.
A Working Meeting II: Counseling Victims of Sexual Assault About AIDS, NIMH Special Projects, March - July, 1988, $19,764.00.
RO1 MH43747-01 HIV Antibody Testing: Developing Guidelines for Screening Sexual Assault Victims, NIMH and NCNR, Principal Investigator 1988 - 1991, $119,260.
90-MU-MU-KOO1 Child Sexual Abuse: Victims of Federal Crimes, Office for Victims of Crime. Sub-contract to Paul & Lisa, Inc., $44,240, 1990 - 1991.
91-MC-R-004 Abducted Child Study, FBI Interagency Agreement with OJJDP, DOJ, $257,888, 1990-1994.
H28/CCH317184 National Sexual Violence Resource Center, CDC. Subcontract to Pennsylvania Coalition Against Rape, 1999-2004, $700,000
00-VA Battering and Stalking Behaviors Reported by Veterans Followed by the Behavioral Health Clinics, Veteran's Administration Agency, 2000-2003, $48,995.
NIJ Identifying Forensic Markers in Elder Sexual Abuse, National Institute of Justice, PI, 2000-2003, $99,285.
NIJ Evaluating SANE/SART Programs. Sub-contract to American Prosecutors Research Institute, $75,000, 2003-2005.
NIJ Elder Sexual Abuse Victims and their Offenders, PI, 2003-2005, $252,110.
OJJDP Strategies used by Internet Offenders in Crimes Against Children. Co-PI, 2006-2007 $100,046
OJJDP A Multi-Pronged Approach to Internet Child Safety, OJJDP Award # 2006-JW-BX-K069, Co-PI, $295,000.
DOJ Campus Sexual Misconduct: Using Perpetrator Risk Assessment and Tailored Treatment to Individualize Sanctioning, DOJ SMART grant DOJ#2014-AW-BX-K002. PI Robert Prentky, Multi-site project with University of Arizona and Fairleigh Dickenson University, 2014-2017, $1,315,906.
Collegiate Athlete Warrior Initiative, Wounded Warrior Project, PI, 2015-2016, $249,000.

PROFESSIONAL ACTIVITIES

Chairperson, Advisory Committee to the National Center on Rape Prevention and Control, Department of Health & Human Services, 1976 - 80.
Visiting Privileges, Department of Health & Hospitals, Boston, MA, 1976-93.
Member, Task Force on Families of Catastrophe, Family Research Institute, Purdue University, 1980.
Member, Scientific Committee on the Mental Health Needs of Victims, World Federation of Mental Health, 1981 - 1983.
Member, Task Force on Special Dispositional Statutes Sentencing and Placement of Mentally Disabled Offenders and Treatment of Mentally Disabled Prisoners, American Bar Association, Criminal Justice Mental Health Standards Project, Phase II, 1982 - 1983.
Member, U.S. Attorney General's Task Force on Family Violence, 1983 - 1984.
Member, Surgeon General's Symposium on Violence, Leesburg, VA, 1985.
Charter Member, National Center for Nursing Research Advisory Council of the National Institutes of Health, 1986-88.
Member, National Center for Nursing Research Priority Expert Panel B. on HIV Infection: Prevention and Care, 1988 - 89.
Member, Office for Technology Assessment, Advisory Panel on Adolescent Health, in U.S. Congress, 1988-89.
Member, Study Section on HIV and Related Research, NIH, 1989-1992.
Chair, Study Section on HIV and Related Research, NIH, 1992-94
Chair, Special Study Section of Nursing and HIV, NINR, 1994.
Member, National Institutes of Health Reviewers Reserve (NRR), 1994-
Consultation, research and training, FBI Academy, Quantico, VA, 1978 - 94.
National Academy of Sciences, Institute of Medicine, 1994-
Chair, Developing a Research Agenda on Violence Against Women, National Research Council, 1994-1996;
Cardinal's Commission on Protection of Children, Boston Archdioceses, 2002-2003.
Member, US Surgeon General Richard Carmona's Workshop, "Making Prevention of Child Maltreatment A National Priority", March 31, 2005

Editorial Experience

Interim Editor, Victims & Offenders Journal, 2008

Editorial Board:

Member, Journal of Traumatic Stress, 1988-1991
Journal of Family Violence, 1985-
Journal of Child Sexual Abuse, 1991-
Archives of Psychiatric Nursing, 1990-1996
Crisis Intervention and Time-Limited Treatment, 1994-2000
American Journal of Psychotherapy, 1994-
Brief Treatment and Crisis Intervention, 2001-
Victims & Offenders, 2006-

Associate Editor: The Journal of Psychotherapy: Practice and Research
Contributing Editor: Sexual Assault Report
Editorial Consultant: Journal of Emergency Nursing, Journal of Interpersonal Violence

Reviewer, American Journal of Psychiatry, Hospital and Community Psychiatry, Research in Nursing and Health, Journal of the American Medical Association, Journal of Child Abuse and Neglect, Journal of Emergency Nursing, Psychiatry, Nursing Research, American Journal of Orthopsychiatry, Obstetrics; Journal of Orthopedic Nursing; Journal of Neuropsychiatry and Clinical Neurosciences,
The Forensic Panel, 1999-

SERVICE WORK IN THE COMMUNITY

Founded with Lynda Lytle Holmstrom, a Victim Counseling Program at Boston City Hospital, 1972-1975.
Counseling rape victims; on call with Lynda Lytle Holmstrom, July 1972 - July 1973.
Accompanied rape victims to court, July 1972 - 1974.
Testified in court regarding Victim Counseling Program, 1974 - 1978.
Organized and implemented training program for victim counselors, with Lynda Lytle Holmstrom, at Boston City Hospital, July - August, 1973.
Supervised, with Lynda Lytle Holmstrom, the second year of the Victim's Counseling Program,, July 1973 - August 1974; conducted weekly case references.

ACADEMIC HONORS AND AWARDS

Undergraduate: Dean's List: 1957, 1958
Sigma Theta Tau, 1957
Graduate: U.S.P.H. Traineeship, 1958 - 1959; 1962 - 1965
Doctor of Humane Letters (honorary): 2001 University of San Diego

Professional
Honorary Key Member, Boston College Gold Key Society, Class of 1976.
Stephen Shafer Award, National Organization of Victim Assistance for achievements for research, evaluation, theory development and academics, 1978.
Current Impact on Research and Scholarship Award of the American Nurses Association Council of Specialists in Psychiatric Mental Health Nursing, 1979.
C. Wright Mills Honorable Mention Award of the Society for the Study of Social Problems for the book, The Victim of Rape: Institutional Reactions (with Lynda Lytle Holmstrom), 1979.
American Journal of Nursing Books of the Year Award for the book, Rape: Crisis & Recovery (with Lynda Lytle Holmstrom), 1979; Psychiatric Nursing in the Hospital and the Community 4th edition, 1985 and 5th edition, 1990.
Psychiatric Nurse of the Year by Nurse Educator and Perspectives in Psychiatric Care, 1980.
Massachusetts Nurses Association General Award, 1980.
American Nurses Association Honorary Nursing Practice Award, 1982.
Advocates for Child Psychiatric Nursing, National Advocacy Award, 1989.
Journal of Psychosocial Nursing Psychiatric Nurse of the Year Award,
November 1991.
Eastern Regional Conference on Abuse and Multiple Personality
Annual Award, June, 1992.
American Professional Society on the Abuse of Children, Outstanding Professional Award, January 1992.

International Society of Traumatic Stress Studies, Pioneer
Award, October, 1993.
International Police Chiefs Book Award for Crime Classification Manual, 1994.
International Association of Forensic Nurses Scholar award, October, 1995.
Sigma Theta Tau Audrey Hepburn Award, November 1995.
American Nurses Association Hildegard Peplau Award, June 1996.
Sigma Theta Tau Episteme Award, November 1999.
University Distinguished Teaching Award. Boston College. May 2007.
International Association of Forensic Nurses Burgess Research Award, October 2009
Sigma Theta Tau International Nurse Researchers Hall of Fame, July 2010
Connell School of Nursing Nurse Scientist at Newton-Wellesley Hospital, 2012-2013.
New England Chapter of the American Psychiatric Nurses Association (NEAPNA), Inaugural Living Legend Award, March 8, 2013.
University of Pennsylvania School of Nursing. Honoring Distinguished Service to Psychiatric Mental Health Nursing. May 16, 2014.
American Professional Society on the Abuse of Children award July 23, 2015

PUBLICATIONS

Books

1. Burgess, A.W. *Psychiatric Nursing in the Hospital and Community*, Norwalk, CT: Appleton & Lange, Fifth ed., 1990;Fourth ed. 1985; Third ed. 1981; Second ed. 1976 & First ed. 1973 with Aaron Lazare.
2. Burgess, A.W. and Holmstrom, L.L. *Rape: Victim of Crisis*, Bowie, MD: Brady Co., 1974.
3. Burgess, A.W. Nursing: Levels of Health Intervention, Englewood Cliffs, NJ: Prentice Hall, Inc., 1978.
4. Burgess, A.W., Groth, A.N., Holmstrom, L.L. & Sgroi, S.M. *Sexual Assault of Children and Adolescents,* New York: Lexington/Macmillan Inc., 1978.
5. Holmstrom, L.L. and Burgess, A.W. *The Victim of Rape: Institutional Reactions*, New York: Wiley, 1979. Published in paperback. New Brunswick, NJ: Transactions, 1983.
6. Burgess, A.W. and Baldwin, B.A. *Crisis Intervention: Theory and Practice*, Englewood Cliffs, NJ: Prentice-Hall, Inc., 1981.
7. Hazelwood, R.R., Dietz, P.E. and Burgess, A.W. *Autoerotic Fatalities*, NY: Lexington Books/Macmillan, 1983.
8. Burgess, A.W. (ed.) *Child Pornography and Sex Rings*, NY: Lexington Books/Macmillan, Inc., 1984.
9. Burgess, A.W. and Holmstrom, L.L. *Rape: Crisis and Recovery*, West Newton, MA: Awab, Inc., 1986.
10. Burgess, Ann Wolbert (ed.), *Rape and Sexual Assault, Vol. I: A Research Handbook* (New York: Garland Publishing, Inc.), 1985; Vol. II 1987; Vol. III 1991.
11. Burgess, Ann Wolbert and Hartman, C.R. (Eds.) *Sexual Exploitation of Patients by Health Professionals.* (New York: Praeger), 1986.
12. Hazelwood, R.R. and Burgess, A.W. (Eds.) *Practical Rape Investigation*, (New York: Elsevier), 1987. Second ed. published by CRC Press, Inc. Boca Raton, FL, 1995; Third ed. 2001, 4th. ed 2009; 5th edition 2016.

13. Janus, M.D., McCormack, A., Burgess, A.W. & Hartman, C.R.: *Adolescent Runaways*, (Lexington, Mass: Lexington Books), 1987.
14. Ressler, R.K., Burgess, A.W. and Douglas, J.E. *Sexual Homicide: Patterns and Motivation*, New York: Free Press, 1988. Translated into Japanese and published by Kodansha, 1995. Translated into Chinese and published by Taiwan Wisdom Publ, 1996.
15.Douglas, J.E., Burgess, A.W., Burgess, A.G., Ressler, R.K. *The Crime Classification Manual*, San Francisco: Jossey-Bass, 1996. Translated into Japanese and published by Kodasha, 1996. 2/ed in 2006. Translated into Chinese. 3/ed. in 2013.
16. Burgess, A.W. (Ed.). *Child Trauma: Issues and Research*, New York: Garland Publ., 1992.
17. Crowell, N.A. and Burgess, A.W. *Understanding Violence Against Women*, Washington, DC: National Academy Press, 1996.
18. Burgess, A.W. (ed) *Psychiatric Nursing: Promoting Mental Health*. Stamford, CT: Appleton-Lange, 1997.
19. Burgess, A.W. (ed.) *Advanced Practice in Psychiatric Mental Health Nursing*. Stamford, CT: Appleton-Lange, 1997.
20. Burgess, A.W. *Violence Through a Forensic Lens*. King of Prussia, PA, Nursing Spectrum, 2000. Received the 2000 American Journal of Nursing Book of the Year Award. 2/edition 2002.
21.Prentky, R.A., and Burgess, A.W. *Forensic Management of Sex Offenders*. New York: Kluwer Academic/Plenum, 2000.
22. Burgess, AW, Regehr, C. & Roberts, A. (2010) *Victimology: Theories and Applications*. Burlington, MA: Jones & Bartlett. 2/ed. In 2013.
23. Burgess, AW, Piatelli, MJ & Pasquelone, GA *Forensic Science Lab Manual*.(2011) Burlington, MA: Jones & Bartlett.
24.Ledray, L., Burgess, AW & Giardino, A. (eds.) (2011) *Medical Response to Adult Sexual Assault: A Resource for Clinicians and Related Professionals* . St. Louis, MO. GW Medical Publishing.
25. Clements, P.T., Burgess, A.W., Fay-Hiller, T.M., Giardino, E.R. & Giardino, A.P. (2014) *Nursing Approach to the Evaluation of Child Maltreatment*. St. Louis: STM Learning.

Monographs
1. Burgess, A.W. *The Sexual Victimization of Adolescents* (Washington, D.C.: Government Printing Office DHHS Publ. No. (ADM) 85-1382), 1985.
2. Burgess, A.W. *Youth At Risk: Understanding Runaway and Exploited Youth*. Arlington, VA: National Center for Missing and Exploited Children, 1986:1-43.
3. Burgess, A.W. and Grant, C. *Children Exploited Through Sex Rings*, Arlington, VA: National Center for Missing & Exploited Children, 1988:1-40.
4. *Female Juvenile Prostitution: Problems and Response*. Arlington VA: National Center for Missing and Exploited Children, 1992.
5. *Child Molesters* (eds) Lanning, K.L. & Burgess, A.W. Arlington, VA: National Center for Missing and Exploited Children, 1995.
6. *Infant Abduction*, Arlington, VA: National Center for Missing and Exploited Children, 1995.

Book Chapters
International Publications

1. Hartman, C.R. and Burgess, A.W. "Omvardnad av valdtakts och incest-offer," Omvardnad 19845 (Omvardnadsforum HB: The Forum of Nursing Care).
2. A. Nicholas Groth and Ann Wolbert Burgess, "Violenza Carnale: An Atto Pseudo-sessuale," in Dallas Parte Delle Vittima a cura di G. Gulotta e M. Vaggagini Giuffre Editore, 1980:179-184.
3. Ann Wolbert Burgess, A. Nicholas Groth & Lynda Lytle Holmstrom. "Violenza Carnale," Scambi Verbali Fra Vittima E Aggressore a cura di G. Gulotta e M. Vaggagini Giuffre Editore, 1980:297-312.

English Publications

1. Burgess, Ann Wolbert and Lynda Lytle Holmstrom, "Rape: Its Effects on Task Performance at Varying Stages in the Life Cycle," in *Sexual Assault: The Victim and the Rapist* (eds.) Marcia Walker and Stanley Brodsky (Lexington, MA: Lexington Books), 1976: 23-34.
2. Burgess, Ann Wolbert and Anna T. Laszlo, "When the Prosecutrix is a Child: The Victim Consultant in Cases of Sexual Assault," in *Victims and Society* (ed.) Emilio C. Viano (Washington, DC: Visage Press) 1976: 382-90.
3. Burgess, Ann Wolbert and Jane T. Huntington, "Rape Counseling: Perspectives of Victim and Nurse," in *Human Sexuality for Health Professionals* (eds.) Martha Barnard, Barbara Clancy and Kermit Krantz (Philadelphia: W.B. Saunders, Co.) 1978: 171-282.
4. Holmstrom, Lynda Lytle and Ann Wolbert Burgess, "The Victim Goes on Trial," in *Victimology: A New Focus, Vol. III* (eds.) Israel Draepkin and Emilio C. Viano (Lexington, MA: Lexington Books), 1975: 31-47.
5. Burgess, Ann Wolbert and Lynda Lytle Holmstrom, "Victims of Sexual Assault," in *Outpatient Psychiatry: Diagnosis and Treatment* (ed.) A. Lazare (Baltimore, MD: Williams and Wilkins Co.) 1979: 537-547.
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Court Testimony:

1. Doe v Madison Park, Chicago, IL. Plaintiff att'y Philip Corboy
2. State v. Jason Williford. Defense Ernest Conner, Raleigh, North Carolina
3. Payne v. McMorrow et al, Lawrence Superior Ct, MA. Defense: Joseph Franchione & Janet Bobit
4. Oliverio v. J. Arthur Trudeau Memorial Center, Providence, R.I. Plaintiff: Decof & Decof
5. Courchaine v. Bolton Nursing Home, Middlesex Superior Ct.Plaintiff att'y: Bernard Hamill
6. Doe v. De Amigos, d/b/a Spot Lounge and Mazin Saleh, Washington DC: Plaintiff Bode & Grenier
7. Doe v. St. Leonards Ministries, Plaintiff att'y Martin Dolan, Chicago July 2015
8. Wahlstrom v. Radisson Hotel, Judge Paul Wilson, Plaintiff att'y David Hoey July 2015
9. A.R. vs. North Eastern Services-Lakeside. Plaintiff Shaun Peck & Rand Henderson, Defense Gregory Sanders, April 2015
10. DeShields vs. Kiddie Kollege, Dover, DE. May 2016

Depositions:

1. Jane Doe vs. Scottsdale Unified School District, et al. Phoenix, AZ
2. Joshua Book, et al., v. Bancroft NeuroHealth, Lynne N. Nahmani,Cherry Hill, NJ
3. Wilkinson v. ResCare, Matthew Boyd, Atlanta, GA
4. Flowers v. Wesleyan Village, Blake Dickson, Beachwood, Ohio
5. Carvajal v The Lodge, Miami, FL.
6. Macking et al. v. Mount Paran Church of God, North, Inc., et al., Atlanta, GA
7. Moran v Mandalay Bay, Las Vegas, NV
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9. Mitchell v. Three Rivers, etc., Columbia, SC
10. Doe v Concordia, Matthew Ports, Chicago, IL
11. Washington for Moore v Alden Town Manor, et al., Colleen Mixon, Chicago, IL
12. Lang v. A Small Miracle, Ernest Conner, Jr., Greenville, North Carolina
13. Arian Borghei v. Whirlpool Corp, et. Al, Peter Everett, Fairfax, VA
14. Hilbert vs Menard, Marc Quigley, Carmel, IN
15. Doe v. EastConn, Hartford, CT, Plaintiff T. O'Keefe
16. A. Griffeth vs. The Roman Catholic Church of the Diocese of Phoenix, et al., Plaintiff J. Covault
17. M. Foley vs. The Roman Catholic Church of the Diocese of Phoenix, et al., Plaintiff I. Lerma
18. W. McCants vs. Fairfield Health Care, LLC, Plaintiff E.Connor, S.C.

Testimony 2012 – 2016

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JOURNAL OF COMMUNICATION

Exposure to Pornography and Acceptance of Rape Myths

Mike Allen, Tara Emmers, Lisa Gebhardt, Mary A. Giery

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Cited by: 5

The original analysis and data collection was conducted as part of a graduate seminar at the University of Wisconsin-Milwaukee.

Abstract

This paper quantitatively summarizes the literature examining the association between acceptance of rape myths and exposure to pornography. In this meta-analysis, nonexperimental methodology shows almost no effect (exposure to pornography does not increase rape myth acceptance), while experimental studies show positive effect (exposure to pornography does increase rape myth acceptance). Although the experimental studies demonstrate that violent pornography has more effect than nonviolent pornography, nonviolent pornography still demonstrates an effect.

Journal
Deviant Behavior >
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Original Articles

Pornography and sexual aggression: Associations of violent and nonviolent depictions with rape and rape proclivity

Scot B. Boeringer

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The current research on the relationship between pornography and sexual violence has produced mixed findings. Some studies show a connection between violent depictions and rape, while others examining nonviolent sexual material report inconsistent findings or no effects. This paper examines the potential connection between rape and rape proclivity and use of soft-core pornography and three types of hard-core pornography: nonviolent pornography, violent pornography, and rape pornography. Data collected from a sample of 515 college men indicated strong bivariate associations of rape and rape proclivity with use of almost all forms of pornography. Multivariate analysis indicated that the strongest correlates of sexual coercion and aggression, as well as rape proclivity, were exposure to hard-core violent and rape pornography. Exposure to nonviolent hard-core pornography displayed no association net of the other variables. Exposure to soft-core pornography was positively associated with likelihood of sexual force and nonviolent coercive behavior, but negatively associated with likelihood of rape and actual rape behavior.

AGGRESSIVE BEHAVIOR

Research Article

Pornography and attitudes supporting violence against women: revisiting the relationship in nonexperimental studies

Gert Martin Hald, Neil M. Malamuth, Carlin Yuen

First published: 27 October 2009
https://doi.org/10.1002/ab.20328
Cited by: 82

Abstract

A meta-analysis was conducted to determine whether nonexperimental studies revealed an association between men's pornography consumption and their attitudes supporting violence against women. The meta-analysis corrected problems with a previously published meta-analysis and added more recent findings. In contrast to the earlier meta-analysis, the current results showed an overall significant positive association between pornography use and attitudes supporting violence against women in nonexperimental studies. In addition, such attitudes were found to correlate significantly higher with the use of sexually violent pornography than with the use of nonviolent pornography, although the latter relationship was also found to be significant. The study resolves what appeared to be a troubling discordance in the literature on pornography and aggressive attitudes by showing that the conclusions from nonexperimental studies in the area are in fact fully consistent with those of their counterpart experimental studies. This finding has important implications for the overall literature on pornography and aggression. Aggr. Behav. 36:14–20, 2010. © 2009 Wiley-Liss, Inc.

JOURNAL OF COMMUNICATION

Original Article

A Meta-Analysis of Pornography Consumption and Actual Acts of Sexual Aggression in General Population Studies

Paul J. Wright, Robert S. Tokunaga, Ashley Kraus

First published: 29 December 2015
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Abstract

Whether pornography consumption is a reliable correlate of sexually aggressive behavior continues to be debated. Meta-analyses of experimental studies have found effects on aggressive behavior and attitudes. That pornography consumption correlates with aggressive attitudes in naturalistic studies has also been found. Yet, no meta-analysis has addressed the question motivating this body of work: Is pornography consumption correlated with committing actual acts of sexual aggression? 22 studies from 7 different countries were analyzed. Consumption was associated with sexual aggression in the United States and internationally, among males and females, and in cross-sectional and longitudinal studies. Associations were stronger for verbal than physical sexual aggression, although both were significant. The general pattern of results suggested that violent content may be an exacerbating factor.

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ORIGINAL ARTICLE

A Meta-Analysis of Pornography Consumption and Actual Acts of Sexual Aggression in General Population Studies

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Whether pornography consumption is a reliable correlate of sexually aggressive behavior continues to be debated. Meta-analyses of experimental studies have found effects on aggressive behavior and attitudes. That pornography consumption correlates with aggressive attitudes in naturalistic studies has also been found. Yet, no meta-analysis has addressed the question motivating this body of work: Is pornography consumption correlated with committing actual acts of sexual aggression? 22 studies from 7 different countries were analyzed. Consumption was associated with sexual aggression in the United States and internationally, among males and females, and in cross-sectional and longitudinal studies. Associations were stronger for verbal than physical sexual aggression, although both were significant. The general pattern of results suggested that violent content may be an exacerbating factor.

Keywords: Violence, Aggression, Pornography, Sexually Explicit Media, Meta-Analysis.

doi:10.1111/jcom.12201

Whether the consumption of pornography is associated with sexual aggression risk has been the subject of decades of scholarly inquiry and multiple government investigations. Rationales for why consuming pornography should, and should not, increase the likelihood of sexual aggression have been put forward by numerous researchers. Scholars who maintain that pornography is a risk factor point to theories of classical conditioning, operant learning, behavioral modeling, sexual scripting, construct activation, and gendered power (see D'Abreu & Krahe, 2014; Kingston, Malamuth, Fedoroff, & Marshall, 2009; Seto et al., 2010). Scholars who maintain that pornography reduces sexual aggression risk or that any effect is inconsequential argue for masturbatory catharsis, that pornography must be violent to affect aggression and violent pornography is extremely rare, or that countervailing prosocial influences dwarf

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any possible aggression-promoting messages that appear in pornography (see Diamond, Jozifkova, & Weiss, 2011; Ferguson & Hartley, 2009; Fisher & Grenier, 1994).

The former set of theories would lead to the hypothesis that people who consume pornography are more likely to behave in sexually aggressive ways than people who do not consume pornography or who less frequently consume pornography. The latter set of assertions would lead to the hypothesis that people who consume pornography are either less likely to behave in sexually aggressive ways or are indistinguishable in terms of sexual aggression from people who do not consume pornography or who less frequently consume pornography. To better understand which hypothesis provides a better match to the accumulated research findings, this article reports a meta-analysis of studies correlating direct measures of pornography consumption with direct measures of sexual aggression in general population studies. Following Hald, Malamuth, and Yuen's (2010) recent meta-analysis of aggression-related attitudes, pornography is defined as media featuring nudity and explicit sexual acts designed to arouse the consumer.

Previous meta-analyses

One tactic for investigating whether pornography impacts sexual aggression is to compare individuals who have and have not been charged with sexual offending. In a meta-analysis of eight studies, Seto and Lalumiere (2010) found that male adolescent sex offenders reported more exposure to sex or pornography than male adolescent nonsex offenders. Allen, D'Alessio, and Emmers-Sommer's (1999) meta-analysis included adult sex offenders and assessed both the use of and arousal to pornography. Sex offenders scored slightly higher than nonoffenders across 13 studies that assessed some indicator of use. A larger difference was found across the 32 studies that assessed sexual arousal, with sex offenders showing more arousal to pornography than nonoffenders.

While sex offender studies are suggestive, they assume that individuals who have not been charged with a sexual offense are sexually nonaggressive. Because most sexual assaults go unreported and a minority of reported sexual assaults lead to arrests, equating a lack of formal charges with a lack of sexual aggressiveness is problematic (Planty, Langton, Krebs, Berzofsky, & Smiley-McDonald, 2013; Rape Abuse Incest National Network (RAINN), 2015). Sex offender studies also conflate charges with actual offenses. For these reasons, Malamuth, Addison, and Koss (2000) argued that studies on pornography and sexually aggressive behavior in general population samples would be an important contribution to the literature, but noted that as of their writing, no meta-analysis had been conducted because of a paucity of studies.

General population studies that have been meta-analyzed involve (a) the effects of experimental exposure to pornography on nonsexual aggression and attitudes supportive of violence (ASV) and (b) naturalistic (i.e., self-selected) pornography consumption and ASV. Allen, D'Alessio, and Brezgel (1995a) meta-analyzed 33 experiments and found that pornography exposure increased nonsexual aggression.

Nonsexual aggression was operationalized as intentional physical, material, or psychological aggression (e.g., the administration of electric shocks). Allen, Emmers, Gebhardt, and Giery (1995b) meta-analyzed 16 experiments and found that pornography exposure increased ASV. Hald et al. (2010) meta-analyzed nine survey studies and found that naturalistic pornography consumption was associated with higher levels of ASV. Examples of ASV include acceptance of interpersonal violence, rape myth acceptance, and sexual harassment proclivities. Important both for experimentalists interested in further tests of the effects of pornography and for policy makers interested in the potential remedial role of media literacy efforts is a meta-analysis by Allen, D'Alessio, Emmers, and Gebhardt (1996) on educational briefings. This meta-analysis of 10 experimental studies suggested that educational preexposure briefing and postexposure debriefing materials informing participants about the fictional nature of pornography and the harms of sexual aggression may mitigate its adverse attitudinal effects.

Current meta-analysis

Despite years of research and social concern about pornography and sexually aggressive behavior, arguably the most important meta-analysis has yet to be conducted. Prior meta-analyses have shown that pornography consumption is associated with higher levels of nonsexual aggressive behavior and ASV, but nonsexual aggression in the laboratory cannot be directly equated to real-life acts of sexual aggression and attitudes do not always predict behavior. Accordingly, the first research question of the present meta-analysis asks whether pornography consumption is positively correlated with actual acts of sexual aggression (RQ1).

Potential moderators

The association between pornography consumption and sexual aggressive behavior may not be uniform across samples and methods (Hald et al., 2010; Mundorf, Allen, D'Alessio, & Emmers-Sommer, 2007). The exploration of moderating variables in a meta-analysis is limited by the characteristics of the located studies. The studies found for the present meta-analysis did allow, however, for the exploration of several potential moderators suggested by relevant literatures.

Biological sex

Because aggression in pornography is generally directed toward women (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010), it might be expected that pornography would more strongly predict the sexually aggressive behavior of males than females. However, women have been found to aggress against other women in pornography (Sun, Bridges, Wosnitzer, Scharrer, & Liberman, 2008) and females' social learning of aggression is not limited to same-sex models (Bandura, Ross, & Ross, 1961). This meta-analysis' second research question asks whether pornography consumption is differentially associated with sexually aggressive behavior among males and females (RQ2).

Age

Conventional theorizing would suggest that the effect of pornography on sexual aggression would be stronger for adolescents than adults due to adolescents' lack of sexual experience and less developed critical thinking and forethought capacities. But adults may also be affected for a number of reasons, including the possession of more gendered beliefs about sex and a longer history of exposure (Peter & Valkenburg, 2011; Wright & Tokunaga, 2015a). This meta-analysis' third research question asks whether pornography consumption is differentially associated with sexually aggressive behavior among adolescents and adults (RQ3).

National/International

It has long been suggested that the effect of pornography on sexual aggression is different outside of the United States (Malamuth & Billings, 1986), where most studies have been conducted. However, many recent studies of pornography consumption and other sexual behaviors in the United States and internationally have shown more similarity than difference (Wright, Bae, & Funk, 2013). This meta-analysis' fourth research question asks whether pornography consumption is differentially associated with sexually aggressive behavior in national and international studies (RQ4).

Pre-/post-Internet

Pornography is increasingly accessed online. Factors such as easier access to more violent content, anonymity, and increased control over content selection may enhance the effects of online pornography (Dines, 2010; Fisher & Barak, 2001; Shim & Paul, 2014). However, pornography had been suggested as a risk factor in sexual aggression and violent pornography was available well before the advent of the Internet (Donnerstein & Hallam, 1978; U.S. Attorney General, 1986). This meta-analysis' fifth research question asks whether pornography consumption is differentially associated with sexually aggressive behavior in pre-Internet and post-Internet studies (RQ5).

Type of pornography

If facilitating effects of pornography on sexual aggression depend on overt displays of force or coercion, then violent pornography consumption should correlate with sexual aggressiveness while nonviolent pornography consumption should not (Allen et al., 1995b). Translated methodologically, measures assessing naturalistic exposure to violent pornography will correlate with sexual aggression while measures assessing naturalistic exposure to nonviolent pornography will be unrelated to sexual aggression.

The violent/nonviolent binary may be flawed, however. An infrequently investigated—but often discussed—third category is nonviolent but objectifying and degrading pornography (Kingston et al., 2009; Seto et al., 2010). Not explicitly violent, but nevertheless dehumanizing, depictions may also affect aggressive attitudes and disinhibit aggressive behaviors (Wright & Tokunaga, 2015b). In their meta-analyses, Allen and colleagues found that experiments in which investigators

classified content as "nonviolent" did not result in a statistically weaker aggressive response (Allen et al., 1995a, p. 271) or, across all experiments, a statistically weaker increase in ASV (although content labeled "violent" produced a stronger effect than content labeled "nonviolent" within studies that included both conditions; Allen et al., 1995b, p. 19). If, in naturalistic studies, individuals who consume objectifying and degrading pornography record their exposure in relation to questions about their nonviolent pornography viewing, these studies may still find significant associations. Accordingly, this meta-analysis' sixth research question asks if there is a difference in correlational strength between indices of violent pornography consumption and sexual aggression and indices of nonviolent pornography consumption and sexual aggression (RQ6).

Most measures of pornography consumption in naturalistic studies do not ask about exposure to various types of content, such as nonviolent, nonviolent but degrading, violent, and so forth, however. Instead, participants are simply asked about their frequency of consumption of content featuring nudity and explicit sex. These general, content nonspecific measures offer an opportunity to probe another important question. Recent studies suggest that the majority of popular pornography has themes of aggression, degradation, or objectification (Bridges et al., 2010; Dines, 2010; Sun et al., 2008). If these studies are accurate and the pornography consumed by most individuals features one or more of these themes, then content nonspecific measures and measures of violent consumption should both correlate with sexual aggression. However, if these studies are inaccurate and the pornography consumed by most individuals is devoid of aggression, degradation, or objectification, then content nonspecific measures of pornography consumption should be unrelated to sexual aggression. This meta-analysis' seventh research question asks if there is a difference in correlational strength between indices of violent pornography consumption and sexual aggression and indices of general, content nonspecific pornography consumption and sexual aggression (RQ7).

Type of sexual aggression

Sexual aggression can take many forms. Two of the more researched types of sexual aggression are physical and verbal (Centers for Disease Control and Prevention (CDCP), 2014). Physical sexual aggression refers to the use or threat of physical force to obtain sex. Examples of physical force provided by the CDCP include "pinning the victim's arms, using one's body weight to prevent movement or escape, use of a weapon or threats of use, and assaulting the victim" (p. 11). Verbal sexual aggression refers to verbally coercive but not physically threatening communication to obtain sex, and sexual harassment. Examples of verbal coercion and harassment provided by the CDCP include "being worn down by someone who repeatedly asked for sex or showed they were unhappy; feeling pressured by being lied to, or being told promises that were untrue; having someone threaten to end a relationship or spread rumors; sending unwanted sexually explicit photographs; creating a sexually hostile climate, in person or through the use of technology" (p. 12).

Given that the unethicality of and penalties for physical sexual aggression are more apparent than for verbal sexual aggression, physical sexual aggression may be more difficult to disinhibit. Indeed, physical sexual aggression is rarer than verbal sexual aggression (Boeringer, 1994; Kennair & Bendixen, 2012). It is important to see if pornography consumption is correlated with both types of aggression and if these correlations differ in magnitude. This meta-analysis' eighth research question asks whether pornography consumption is differentially associated with physical sexual aggression and verbal sexual aggression (RQ8).

Cross-sectional/longitudinal data

Cross-sectional data are those gathered on a single occasion. They allow for assessment of covariation, but not the temporal sequencing of associations. Longitudinal data are those gathered on two or more occasions. Longitudinal data allow for the assessment of both covariation and time-ordering. Because causality is more strongly suggested by prospective than concurrent associations (Malamuth et al., 2000), it is important to see if pornography consumption is associated with sexually aggressive behavior in both cross-sectional and longitudinal data. Additionally, as motives and opportunities for aggressive behavior may take time to arise or appear (Huesmann, 1998), it is important to test if there are differences in the magnitude of pornography–sexual aggression correlations in cross-sectional and longitudinal studies. This meta-analysis' ninth research question asks whether pornography consumption is differentially associated with sexually aggressive behavior in cross-sectional and longitudinal data (RQ9).

Report type

It is important to compare unpublished and published reports for two reasons. First, published reports may be of higher quality, having been vetted by anonymous peer reviewers (Neuman, Davidson, Joo, Park, & Williams, 2008). Second, unpublished reports may be more likely to report null correlations, if journal editors prefer to publish significant findings (Rothstein & Bushman, 2012). This meta-analysis' tenth research question asks whether pornography is differentially associated with sexually aggressive behavior in published and unpublished reports (RQ10).

Method

Literature search

The literature search was conducted as part of an ongoing effort to archive and review studies on media and sexual socialization. The search for the current study was continued until the end of 2014. Electronic database (e.g., Academic Search Premier, All Academic, Cinahl Complete, Communication & Mass Media Complete, ERIC, Google Scholar, JSTOR, Medline, ProQuest, PsycINFO, PubMed, and Sociological Abstracts) and ancestral (e.g., Bauserman, 1996; Flood, 2009; Hald, Seaman, & Linz, 2014; Kingston et al., 2009; Linz & Malamuth, 1993; Seto, Maric, &

Barbaree, 2001) searches were used to locate published and unpublished scientific reports. Searches were conducted by the study's authors. After this compilation effort, eight leading media and aggression scholars were contacted and asked to identify omissions.

Criteria for inclusion in the meta-analysis were threefold. First, the study had to sample from a general population. Sex offender/clinical studies were not included (see Allen et al., 1999; Seto & Lalumiere, 2010). Second, the study had to measure pornography consumption. Pornography was defined as sexually explicit media intended to arouse the consumer (Hald et al., 2010; Seto et al., 2001). Studies that measured exposure to sexually nonexplicit content in mainstream media only were not included. Third, the study had to assess sexually aggressive behavior. Studies that assessed sexually aggressive beliefs and attitudes only were not included (see Allen et al., 1995b; Hald et al., 2010). Authors were contacted directly when the search criteria were met but data necessary to extract an effect size (e.g., zero-order correlations) were not described in the report (Chang et al., 2014; Gorman, 2014; Thompson, Koss, Kingree, Goree, & Rice, 2010; Williams, Cooper, Howell, Yuille, & Paulhus, 2009; Ybarra, Mitchell, Hamburger, Diener-West, & Leaf, 2011). Authors were able to provide the needed information in all but one instance (Harries, 2011). Studies that did not measure pornography consumption and sexual aggression directly, but instead measured indirect indicators of pornography exposure (e.g., reductions in legal restrictions to access) and indirect indicators of sexual aggression (e.g., crime reports) were not included, as they are not able to inform the question of whether the people consuming the pornography are the ones who are or who are not committing the sexually aggressive acts.

Studies meeting these criteria are overviewed in Table 1. Twenty-two studies from 21 reports were identified (Seto et al., 2010, reported on two studies, one conducted in Sweden, the other in Norway).

Moderator coding

Biological sex

Fifteen reports either sampled males only or reported data from their male sample only. Six reports sampled and reported on both males and females. One paper reported on females only.

Age

Five studies' sample descriptions suggested that all or the majority of their participants were adolescents (teenagers aged 17 and younger). Seventeen studies' sample descriptions suggested that all or the majority of their participants were adults (individuals aged 18 and older).

National/International

Fourteen studies were conducted in the United States and eight studies were conducted internationally.

Table 1 Overview of Studies in Meta-Analysis

Study	Age of Sample	Sex of Sample	Design of Study	Report Type	Country of Study
Boeringer (1994)	Adult	Male	Cross-sectional	Article	United States
Bonino et al. (2006)	Adolescent	Male and female	Cross-sectional	Article	Italy
Bouffard (2010)	Adult	Male	Cross-sectional	Article	United States
Brown and L'Engle (2009)	Adolescent	Male and female	Longitudinal	Article	United States
Carr and VanDeusen (2004)	Adult	Male	Cross-sectional	Article	United States
Chang et al. (2014)	Adolescent	Male and female	Longitudinal	Article	Taiwan
Crossman (1994)	Adult	Male	Cross-sectional	Thesis	United States
D'Abreu and Krahe (2014)	Adult	Male	Longitudinal	Article	Brazil
Demare et al. (1993)	Adult	Male	Cross-sectional	Article	United States
Gorman (2014)	Adult	Male and female	Cross-sectional	Thesis	United States
Hardit (2013)	Adult	Male	Cross-sectional	Thesis	United States
Kennair and Bendixen (2012)	Adolescent	Male and female	Cross-sectional	Article	Norway
Kjellgren et al. (2011)	Adult	Female	Cross-sectional	Article	Norway and Sweden
Malamuth et al. (2000)	Adult	Male	Cross-sectional	Article	United States
Peeks (2006)	Adult	Male	Cross-sectional	Thesis	United States
Seto et al. (2010)	Adult	Male	Cross-sectional	Article	Sweden
Seto et al. (2010)	Adult	Male	Cross-sectional	Article	Norway
Simons et al. (2012)	Adult	Male	Cross-sectional	Article	United States
Thompson et al. (2010)	Adult	Male	Longitudinal	Article	United States
Vega and Malamuth (2007)	Adult	Male	Cross-sectional	Article	United States
Williams et al. (2009)	Adult	Male	Cross-sectional	Article	Canada
Ybarra et al. (2011)	Adolescent	Male and female	Longitudinal	Article	United States

Pre-/post-Internet

Few studies demarcated pornography found online and offline. As historians have identified 1995 as an important turning point for popular Internet use (Campbell, 2015; Dominick, Messere, & Sherman, 2008), it was noted if a study was published in/before or after 1995. Three studies were published in 1995 or before. In one instance, Malamuth et al. (2000) published their study after 1995 but gathered their data in the 1980s, so this study was included in studies conducted in/before 1995. Thus, four studies were identified as "pre" Internet and eighteen as "post" Internet.

Type of pornography

Measures of pornography consumption were classified as violent, nonviolent, and general. Following prior meta-analyses (Hald et al., 2010; Mundorf et al., 2007), violent pornography was defined as content depicting sex without consent, with coercive acts, or with aggressive behavior. As an example of nonconsensual content, Boeringer (1994, p. 293) asked about men's exposure to depictions where "force is used and there is an explicit lack of consent." As an example of coercive content, Peeks (2006, p. 93)

asked about men's exposure to depictions of women "receiving negative treatment" or being "drunk or on drugs." As an example of aggressive content, Seto et al. (2010, p. 222) asked whether men and Kjellgren, Priebe, Svedin, Mossige, and Langstrom (2011, p. 3357) asked whether women had "ever watched violent pornography." Eight studies included measures of violent pornography consumption.

Nonviolent pornography was defined as content depicting consensual sex, without coercive acts, and without aggressive behavior. Only two studies included measures that approximated this definition. Demare, Lips, and Briere (1993) asked about men's exposure to depictions of "mutually consenting sex" (p. 289) and classified affirmative responses as nonviolent pornography exposure. Ybarra et al. (2011, p. 5) asked about boys' and girls' exposure to depictions of individuals being "physically hurt by another person while they were doing something sexual." Ybarra et al. classified boys and girls who indicated consuming pornography, but not being exposed to any depictions featuring violence, as nonviolent pornography consumers.

Fourteen studies included only a general, content nonspecific measure of pornography consumption. As one illustration, Simons, Simons, Lei, and Sutton (2012, p. 384) asked men how often during the past year they had "viewed an X-rated movie or visited an X-rated website on the Internet." As another illustration, Bonino, Ciairano, Rabaglietti, and Cattelino (2006, p. 272) asked boys and girls how frequently they had "read or seen pornographic magazines or comics in the last six months and had watched pornographic films or videos in the last six months." While some of these measures identified particular delivery mechanisms (e.g., website, movie, and magazine), none of them identified the type of content being delivered (e.g., violent and nonviolent).

Type of sexual aggression

Following the CDCP (2014), physical sexual aggression was defined as the use or threat of physical force to obtain sex, and verbal sexual aggression was defined as verbally coercive but not physically threatening communication to obtain sex, and sexual harassment. Six studies assessed physical sexual aggression. Kennair and Bendixen (2012, p. 483), for example, measured boys and girls' "use of explicit physical force" to obtain sex. As another example, Crossman (1994, p. 67) assessed if men had "tried to obtain sexual intercourse through threatening to use physical force" or had "obtained sexual acts, such as oral or anal intercourse, through using threats or physical force." Six studies assessed verbal sexual aggression. As one illustration, Demare et al. (1993, p. 289) assessed whether men had engaged in verbally coercive tactics with women such as "threatening to end your relationship" or "pressuring her with continual argument." As another illustration, Chang et al. (2014, p. 4) assessed harassing behaviors among boys and girls such as "asked someone to do something sexual online when they did not want to."

Cross-sectional/longitudinal data

Seventeen studies were cross-sectional and five were longitudinal.

Report type
Four reports were unpublished theses and 18 were published journal articles.

Effect size extraction and correction for measurement error

Reports were examined for their effect size estimates. In many instances, the *r* correlation between pornography use and sexual aggression was reported; however, in some cases, the correlation had to be estimated through unadjusted odds ratios and chi-square values. In reports where a 2×2 contingency table was presented, the log odds ratio was first transformed into Cohen's *d* and then into *r*.

The effect sizes were corrected for measurement error, which attenuates the maximum theoretical effect size (Schmidt & Hunter, 2015). Because attenuation can sometimes occur disproportionately across classes of reports, it is particularly important when testing for moderators to correct for measurement error. The scale reliability reported in each study was used in the correction equation for measurement. The Spearman–Brown formula was used to estimate a case's reliability when one was not reported. The single-item alphas used to estimate the reliability were as follows: pornography consumption ($\alpha_{\text{single-item}} = .42$, $M_{\text{item}} = 4$) and sexual aggression ($\alpha_{\text{single-item}} = .27$, $M_{\text{item}} = 6$).

Results

Analytic approach

The corrected correlations were summarized using a random-effects model meta-analysis. Random-effects procedures are based on the assumption that variation in the true effects exists beyond variation due to sampling error alone (Anker, Reinhart, & Feeley, 2010; Borenstein, Hedges, Higgins, & Rothstein, 2009; Hedges & Vevea, 1998). The effect sizes of the relationship between pornography consumption and sexual aggression are presumed to be normally distributed, and in accounting for this variation, generalizations can be made beyond the set of studies included in this meta-analysis (Hedges & Vevea, 1998). To test the potential moderators, mixed-effects model subgroup analyses were conducted. In the mixed-effects model, a random-effects model is used to estimate the effects *within* subgroups but a fixed-effect model is used to estimate the variance *between* subgroups.

Research Question 1: overall association

Effect sizes for 22 cases were extracted from the 21 reports identified in the literature search (see Table 2). The total number of participants evaluated in the meta-analysis was 20,820 (males = 13,234, females = 7,586), with an average of 947 ($Mdn = 479$) per case. Across the cases, the sample-weighted mean effect size of the association between pornography use and sexual aggression was positive and significant, $r = .28$, $SE = 0.01$, 95% CI [.24, .32], $p < .001$, random-effects variance (v) = .007. Accordingly, consumption of pornography was associated with an increased likelihood of committing actual acts of sexual aggression.

Table 2 Raw and Corrected Effect Sizes for Studies in Meta-Analysis ($N = 20{,}820$)

Study	N	Raw Overall r	Corrected Overall
Boeringer (1994)	477	.268	.390
Bonino et al. (2006)	779	.233	.463
Bouffard (2010)	325	.180	.201
Brown and L'Engle (2009)	967	.190	.277
Carr and VanDeusen (2004)	99	.300	.382
Chang et al. (2014)	2,268	.135	.218
Crossman (1994)	480	.218	.260
D'Abreu and Krahe (2014)	120	.200	.254
Demare et al. (1993)	383	.153	.283
Gorman (2014)	415	.078	.115
Hardit (2013)	177	.120	.191
Kennair and Bendixen (2012)	1,123	.185	.261
Kjellgren et al. (2011)	4,212	.221	.221
Malamuth et al. (2000)	2,652	.170	.203
Peeks (2006)	154	.230	.291
Seto et al. (2010, Sweden)	1,978	.325	.325
Seto et al. (2010, Norway)	1,971	.304	.304
Simons et al. (2012)	308	.170	.235
Thompson et al. (2010)	644	.110	.136
Vega and Malamuth (2007)	102	.480	.655
Williams et al. (2009)	88	.090	.095
Ybarra et al. (2011)	1,098	.384	.427

Research Question 2: biological sex

Research Question 2 asked whether biological sex moderates the association between pornography consumption and sexual aggression. The mixed-effects model subgroup analysis did not indicate a moderating effect of biological sex, $Q_{bet}(1) = 0.24$, $Z_{diff} = 0.49$, $p = .62$. The average correlation for the 21 cases sampling males ($r = .29$, 95% CI [.24, .33], $p < .001$) did not significantly differ from the average correlation for the seven cases that sampled females ($r = .26$, 95% CI [.18, .34], $p < .001$).

Research Question 3: age

The question of whether the correlations between pornography consumption and sexual aggression changed as a function of age groups was asked in Research Question 3. The cases were categorized into a group that used adolescent samples and a group that sampled adults. The results of the subgroup analysis demonstrated that the association between pornography consumption and sexual aggression was not moderated by age group, $Q_{bet}(1) = 2.11$, $Z_{diff} = 1.45$, $p = .15$. The mean correlation for the cases that sampled adolescents ($r = .33$, 95% CI [.25, .40], $p < .001$, $k = 5$) did not differ from the cases that sampled adults ($r = .26$, 95% CI [.21, .31], $p < .001$, $k = 17$).

Research Question 4: national/international

Research Question 4 asked whether a difference in the average correlations between pornography consumption and sexual aggression exists between studies conducted in the United States and those conducted internationally. The international studies (r = .28, 95% CI [.21, .34], $p < .001$, $k = 8$) yielded almost the identical mean effect size as studies conducted in the United States (r = .28, 95% CI [.22, .34], $p < .001$, k = 14). Accordingly, whether the study was conducted nationally or internationally did not affect the relationship between pornography consumption and sexual aggression, $Q_{bet}(1) = 0.001$, $Z_{diff} = 0.03$, $p = .97$.

Research Question 5: pre-/post-internet

Study year was tested as a possible moderator in Research Question 5. The cases were grouped into one of two categories: reports released in or before 1995 and reports made available in or after 1996. This categorization makes it possible to probe whether the association between pornography consumption and sexual aggression differed prior to and after the adoption of the Internet on a mass scale. The results of the subgroup analysis demonstrated that year was not a significant moderator, $Q_{bet}(1) = 0.001$, $Z_{diff} = 0.03$, $p = .97$. The average correlation of the four studies conducted prior to 1995 (r = .28, 95% CI [.17, .37], $p < .001$) was similar in magnitude to the average correlation of the 18 studies conducted after 1996 (r = .28, 95% CI [.23, .33], $p < .001$).

Research Question 6: nonviolent/violent pornography

The content of the pornography consumed was tested as a moderator of associations between pornography consumption and sexual aggression in Research Question 6. Correlations with nonviolent pornography consumption were compared to correlations with violent pornography consumption. Although violent pornography consumption (r = .37, 95% CI [.28, .45], $p < .001$, $k = 8$) produced a stronger association on average than nonviolent pornography consumption (r = .27, 95% CI [.07, .45], p = .008, $k = 2$), the moderation was nonsignificant, $Q_{bet}(1) = 0.91$, $Z_{diff} = 0.95$, $p = .34$.

Research Question 7: general assessment/violent assessment

Whether indices that assess exposure to violent pornography specifically yield stronger associations than indices that evaluate pornography consumption more generally was asked in Research Question 7. In the eight cases that measured violent pornography consumption (r = .37, 95% CI [.28, .45], $p < .001$), a stronger sample-weighted mean correlation was reported in comparison to the 14 cases that measured general pornography consumption (r = .26, 95% CI [.19, .34], $p < .001$). This difference was marginally significant in the mixed-effects model subgroup analysis, $Q_{bet}(1) = 3.34$, $Z_{diff} = 1.83$, $p = .07$.

Research Question 8: type of sexual aggression

Cases that measured verbal or physical sexual aggression were identified. This categorization was performed to test whether associations between pornography consumption and sexual aggression differed depending on if the aggression was verbal or

physical in Research Question 8. Pornography consumption was associated with both verbal ($r = .30$, 95% CI [.24, .36], $p < .001$, $k = 6$) and physical ($r = .20$, 95% CI [.13, .26], $p < .001$, $k = 6$) sexual aggression, but the association was significantly larger for verbal sexual aggression, $Q_{bet}(1) = 5.49$, $Z_{diff} = 2.34$, $p = .02$.

Research Question 9: cross-sectional/longitudinal data

Studies that employed a cross-sectional design were compared to studies that used a longitudinal design in Research Question 9. The design of the study was not a significant moderator of the association between pornography consumption and sexual aggression across the 22 cases, $Q_{bet}(1) = 0.05$, $Z_{diff} = 0.22$, $p = .83$. The average cross-sectional correlation (i.e., the correlation of pornography consumption and sexual aggression at the same data collection: $r = .28$, 95% CI [.23, .33], $p < .001$, $k = 17$) was nearly equivalent in direction and magnitude to the average prospective correlation (i.e., the correlation of pornography consumption at an earlier data collection with sexual aggression at a later data collection: $r = .27$, 95% CI [.18, .36], $p < .001$, $k = 5$).

Research Question 10: report type

The potential moderating effect of report type was tested in Research Question 10. The cases were categorized into published and unpublished reports. No difference was detected by the moderator analysis, $Q_{bet}(1) = 1.44$, $Z_{diff} = 1.20$, $p = .23$. The average correlation of published reports ($r = .29$, 95% CI [.24, .33], $p < .001$, $k = 18$) did not differ from the average correlation of unpublished reports ($r = .21$, 95% CI [.10, .33], $p < .001$, $k = 4$).

Discussion

The meta-analysis reported in this article investigated associations between naturalistic pornography consumption and actual acts of sexual aggression in 22 general population studies. The results are reviewed and contextualized in the remainder of the study. Directions for future research are also considered.

Overall association

Associations between pornography consumption and sexual aggression in the general population can be examined at the aggregate or individual level. Using secondary statistical indices, the former technique correlates an indirect metric of consumption, such as the number of pornographic movies available during a particular time period, with an indirect assessment of sexual aggression, such as government data on rape during the same time period. Using experimental and survey methods, the latter technique correlates attributes of individuals' sexual aggression which are measured directly with those individuals' actual patterns of pornography consumption. Because aggregate methods cannot inform the key question of whether those who consume more pornography differ in their sexually aggressive behavior

from those who consume less pornography and have to rely on group-level data to conjecture about individual-level behavior, the vast majority of pornography and sexual aggression research has been conducted at the individual level (Kingston & Malamuth, 2011; Malamuth & Pitpitan, 2007). Individual-level data should be privileged over aggregate-level data when they are available (MacInnis & Hodson, 2015). Accordingly, the results of the present meta-analysis are situated within the individual-level, general population literature.

Noting continued disagreement about pornography consumption and sexual aggression, Allen et al. (1995a, 1995b) meta-analyzed experimental studies on pornography exposure, nonsexual aggression, and ASV. Pornography exposure was found to have a consistent effect on nonsexual aggression and ASV, resolving the debate about the reliability of experimental studies (Fisher & Grenier, 1994; Malamuth et al., 2000). The debate about the validity of pornography experiments in general, however, remained. Fisher and Grenier, for example, questioned the information value of experiments, in addition to their consistency. They argued that experiments suffer from limitations such as subject awareness, selective attrition, and lack of ecological validity. They called for "naturalistic studies of the development of sexually violent behavior" (p. 37). Later, Fisher and Barak (2001, p. 317) noted the need for "research concerning effects of exposure to sexually explicit materials on those who choose to consume them." The only design capable of assessing effects is the experimental design, and random assignment to conditions is necessary for a study to be an experiment. Without random assignment, any group differences postexposure may be due to self-selection dynamics and preexisting attitudes and behaviors. Additionally, ethical considerations preclude attempts at sexual aggression inducement. In sum, experiments cannot make the requested contributions. They can only be made by correlational investigations, such as survey studies.

Hald et al.'s (2010) meta-analysis of naturalistic pornography consumption and ASV was directly related to these calls. This meta-analysis found that higher levels of pornography consumption were associated with stronger ASV. Fisher, Kohut, Gioacchino, and Fedoroff (2013) were not swayed by these results, however, and emphasized that sexually aggressive behavior is the chief cause for concern.

The general population studies in the present meta-analysis assessed both self-selected pornography consumption and actual acts of sexual aggression, aligning with the requests of prior evaluative commentaries. Although previous meta-analyses have had far smaller total sample sizes than the present synthesis' 20,000 plus total (N = 2,040 in Allen et al., 1995a; N = 4,268 in Allen et al., 1995b; N = 2,309 in Hald et al., 2010), results were consistent with these earlier summaries in that pornography consumption was correlated with heightened sexual aggression risk. It is worth noting that the magnitude of both the overall corrected (r = .28) and uncorrected (r = .22) associations in the present meta-analysis, which focused on actual acts of sexual aggression, were larger than the overall association sizes found in prior syntheses that included a surrogate for sexual aggression risk (r = .13 in Allen et al., 1995a; r = .10 in Allen et al., 1995b; r = .18 in Hald et al., 2010). It should also be

noted that the uncorrected correlations for verbal (r = .23, 95% CI [.18, .28], p < .001) and physical (r = .16, 95% CI [.10, .21], p < .001) sexual aggression were also significant.

Association contingencies

Of the nine moderation tests, seven were null, one was marginal, and one was significant. This general lack of moderation is consistent with past meta-analytic research on pornography and nonsexual aggressive behavior (Allen et al., 1995a) and media consumption and aggression more generally (Anderson et al., 2010). Yet, it is suggested that this homogeny of results be viewed tentatively, as Hald et al.'s (2010) meta-analysis on naturalistic pornography consumption and ASV suggested the likely presence of moderating factors and several moderation comparisons in the present study were based on limited cases or measures. Additional research is needed before any firm conclusions can be drawn about moderating factors. Given that all 22 studies yielded a positive overall correlation, though, it appears likely that any differences found in future research will be more in degree than kind.

Consistent with Allen et al.'s (1995a) meta-analysis of laboratory aggression, biological sex was not a significant moderator. Pornography consumption was associated with an increased likelihood of sexually aggressive behavior for females as well as males. As men's arousal to pornography is stronger than women's (Allen et al., 2007), this finding aligns with the finding of Mundorf et al. (2007) that arousal to pornography is not a reliable predictor of its effects on aggression. Rather, pornography consumption may affect females' aggressive behavior due to the observation of aggressive female models or to identification with male aggressors. Future studies should test whether pornography consumption is more strongly associated with females' verbal sexual aggression than physical sexual aggression (Crick & Grotpeter, 1995) and if pornography consumption more strongly predicts females' same-sex sexual aggression (e.g., insults and harassment) than males' same-sex sexual aggression (Sun et al., 2008). Research is also needed on shifts in women's negative psychological reactions to pornography with repeated exposures. Brief exposure studies have found that women respond more negatively to pornography than men (Allen et al., 2007) and negative reactions would appear to inhibit the likelihood of a modeling effect. Pornographic scripts may become normalized with repeated exposures, however, decreasing negative reactions and increasing the likelihood of script application (Wright, 2011; Zillmann & Bryant, 1982, 1986).

Age was not a moderating factor. Pornography consumption was associated with an equivalent likelihood of sexual aggression among adults and adolescents. Adults' sexually aggressive scripts may be influenced by pornography due to repeated exposures and the possession of scripts congruent with pornography's presentation of gendered power. It is important to note, though, that most of the adult samples were of college students or college-aged students. Because perpetrators of sexual aggression are generally acquainted with their targets and targets of sexual aggression are predominantly adolescents and young adults (Felson & Cundiff, 2014; Planty et al.,

2013), this similarity is perhaps not surprising. Interestingly, the weakest association was found in the study with the oldest sample (Gorman, 2014; average participant age = 46). Future studies should incorporate a wider range of adults so that associations can be compared across a breadth of age groups.

Associations between pornography consumption and sexually aggressive behavior in international studies were not significantly different from those conducted in the United States. What is clear from this analysis is that the association between pornography consumption and sexual aggression is not unique to the United States. What remains unclear is whether the association varies in degree between countries. The reports available for the present meta-analysis allowed only for a basic national/international comparison. A variety of countries were represented (e.g., Brazil, Italy, Norway, Sweden, and Taiwan), but no more than two studies were conducted in any country other than the United States. Only when multiple reports are available within particular countries will a more nuanced analysis be possible.

It has been suggested that the content of pornography found online and novel elements of the online experience may enhance the effects of Internet pornography. As few studies differentiated mechanisms of delivery, a direct comparison of online and offline pornography consumption was not possible. It was found, however, that associations in studies published or conducted before 1995 did not differ from those in subsequent reports. While this finding does not support the contention of exacerbated impacts of Internet pornography, it should certainly not discourage researchers interested in further tests of this hypothesis. Future survey studies on sexually aggressive behavior can ask specific questions about medium of delivery (Peter & Valkenburg, 2007) and future experiments on sexually aggressive attitudes can manipulate aspects of users' experience that mimic online versus offline dynamics (Shim & Paul, 2014).

Violent and nonviolent pornography consumption were each associated with sexual aggression and the difference between the associations was not significant. Two important points are in order regarding these findings. First, that nonviolent pornography consumption was associated with sexual aggression is consistent with the results of prior meta-analyses (Allen et al., 1995a, 1995b; Hald et al., 2010). Measures of self-reported nonviolent pornography consumption may predict sexually aggressive behavior because acts that are indeed violent are not perceived as such by desensitized consumers (Jensen, 2007) or because content that is nonviolent is still objectifying and degrading (Wright & Tokunaga, 2015b). Second, caution is suggested regarding the conclusion from these findings that pornography with violence is no more impactful on the likelihood of sexual aggression than pornography without violence. Although the difference was not statistically significant, the violent pornography association was stronger ($r_{\Delta} = .10$) than the nonviolent pornography association. Significance tests are impacted by sample size, and only two studies assessed nonviolent pornography consumption—the smallest comparison group in the meta-analysis. Additionally, descriptions of the pornography measures that authors called "nonviolent" did not clearly indicate whether each met all the criteria of nonviolence: fully consensual sex without any coercion or any aggressive behavior.

The comparison between general, content nonspecific measures of pornography consumption and measures of violent pornography consumption is informative of this question. Although the difference between the violent and content nonspecific associations was similar to the difference between the violent and nonviolent associations (i.e., violent association .11 stronger than the content nonspecific association), the former comparison involved more cases and was marginally significant. If the content of pornography was uniform or irrelevant to an effect, it appears unlikely that these patterns would emerge in the data. Taken together with research that has found significant nonviolent/violent differences (Hald et al., 2010) and content analyses of popular pornography (Bridges et al., 2010; Sun et al., 2008), it appears most likely that (a) the level of violence, degradation, and objectification matters, but (b) the pornography consumed by the average individual contains enough of these elements that it is associated with an elevated likelihood of sexual aggression. Future studies should be comprehensive and explicit when defining and measuring pornography labeled as "nonviolent," and should evaluate whether nonaggressive, nondegrading, nonobjectifying pornography is so infrequently consumed that its existence is largely irrelevant to discussions of pornography's social impact.

Pornography consumption was associated with both verbal and physical sexual aggression, but the association was stronger for verbal sexual aggression. It is important to emphasize, however, that sexual harassment can be extremely damaging and verbal coercion to obtain sex, even without the threat of physical force, is still an act of sexual violence (CDCP, 2014). It is also important to reiterate that the association for physical sexual aggression, although smaller than the association for verbal sexual aggression, was still positive and significant. Pornography consumption was associated with an increased probability of the use or threat of force to obtain sex. Future studies should more frequently demarcate different types of sexual aggression and investigate the circumstances under which pornography consumption is most likely to correlate with each type.

Pornography consumption was associated with sexually aggressive behavior in both cross-sectional and longitudinal studies. The significant average association in longitudinal research, along with the findings of individual longitudinal studies in the meta-analysis, does not support the position that pornography–sexual aggression associations are simply due to sexually aggressive individuals watching content that conforms to their already established aggressive sexual scripts (Fisher et al., 2013). Brown and L'Engle (2009), for example, found that pornography consumption predicted boys' later sexual aggression even after controlling for their earlier sexual aggression. Relatedly, D'Abreu and Krahe (2014) found that prior sexual aggression was a poor predictor of later pornography use.

Finally, the possibility that significant pornography–sexual aggression associations are due to publication bias was not supported. Pornography consumption was associated with sexual aggression in both published and unpublished reports.

Implications for theory

Assessing the magnitude and direction of the association between pornography consumption and sexually aggressive behavior has been the primary goal of naturalistic studies to date. Most studies are guided by the overall question of whether sexual media are a source of social learning, as opposed to testing specific elements of models developed to explain the role of pornography in sexual aggression specifically (e.g., the confluence model of sexual aggression) or the mechanisms, pathways, and moderators operable in sexual media effects on sexual behavior more generally (e.g., the sexual script acquisition, activation, application model of sexual media socialization, or $_3$AM). This limits the theoretical implications that can be drawn from the results of the present meta-analysis. Nevertheless, several of the aggregated results, results from individual studies, and results from related studies can be used to broach the following points for theory development consideration.

First, the extant data would not support a theory postulating inherent sex differences in the effects of pornography on aggression. Predictions of gender dissimilarity would have to be based on differentiating proximal factors as opposed to uniform biological variance. Second, while there are certainly developmental differences between adolescents and emerging adults, the extant data would not support a theory predicting that these differences lead to one group or the other being more or less susceptible to the effects of pornography on sexual aggression. Third, the extant data would not support a catharsis theory of violent pornography and sexual aggression. From a catharsis perspective, individuals who consume violent pornography purge their sexually aggressive inclinations vicariously, reducing their likelihood of manifest sexual aggression. Without such an outlet, individuals who do not consume violent pornography become more likely to enact their aggressive inclinations on real-life victims. Contrary to the catharsis perspective, violent pornography consumers were more — not less — likely to commit actual acts of sexual aggression. Fourth, the finding that pornography consumption was more strongly associated with verbal than physical sexual aggression would support a theory hypothesizing that the disinhibiting effects of pornography will be stronger for behaviors that individuals perceive as less antisocial or that are associated with less severe penalties.

Fifth, although the studies taken together did not allow for a meta-analytic test of personal attributes, the results of a few individual studies included in the meta-analysis did indicate the importance of individual differences. Future studies should more frequently assess characteristics that are associated with sexual aggression and report zero-order correlations for groups at differing levels of risk (Hald, Malamuth, & Lange, 2013; Kingston et al., 2009). This will allow for a better understanding of the individual differences that interact with pornography exposure to most strongly increase the likelihood of sexual aggression. Three specific attributes suggested by prior research are an impersonal orientation toward sex, a hostile approach to gender relations, and a disagreeable personality. Both naturalistic and experimental research indicate that associations between pornography consumption and sexually aggressive behavior are likely higher when these attributes are present

(Hald & Malamuth, 2015; Malamuth, Hald, & Koss, 2012; Malamuth & Pitpitan, 2007; Malamuth et al., 2000; Vega & Malamuth, 2007).

Conclusion

Meta-analyses have now found that pornography consumption affects nonsexual aggression and ASV in laboratory studies and is correlated with ASV and sexually aggressive behavior in naturalistic studies. As with all behavior, sexual aggression is caused by a confluence of factors and many pornography consumers are not sexually aggressive. However, the accumulated data leave little doubt that, on the average, individuals who consume pornography more frequently are more likely to hold attitudes conducive to sexual aggression and engage in actual acts of sexual aggression than individuals who do not consume pornography or who consume pornography less frequently.

It is acknowledged that the results of the present meta-analysis will not change the minds of those committed to the position that pornography cannot affect sexual aggression (see Linz & Malamuth, 1993; Malamuth & Pitpitan, 2007). The field will have to accept a "weight of evidence" approach to evaluation as opposed to a "consensus among scholars" approach. Following the call of Malamuth et al. (2000) for a meta-analysis of naturalistic pornography consumption and sexually aggressive behavior in general population samples, the present synthesis contributes to the weight of the evidence.

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Exploring the Connection Between Pornography and Sexual Violence

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This article examines the relationship between sexual violence and pornography. Data about women's experiences of sexual violence and their abusers' use of pornography were collected at a rape crisis center from 100 survivors. Findings include that 28% of respondents reported that their abuser used pornography and that for 12% of the women, pornography was imitated during the abusive incident. The effects of pornography on women's experiences of sexual violence are discussed.

Since pornography became increasingly available throughout the 1960's and 1970's in the United States, the effects of such materials have been largely debated by politicians, religious leaders, activists, and academics. The relationship between sexual violence and pornography has been of particular concern to researchers and is the focus of this article. This debate is critical given the prevalence of violence against women and the consumption of pornographic material in the United States. Researchers estimate that in 1995, 43% of American men were exposed to one of the seven most popular pornographic magazines[1] (Russell, 1998). Diana Russell (1998) argues that this is probably a conservative estimate of pornography usage, given that hundreds of magazines exist and that this estimate does not include the number of men who regularly watch pornographic movies, look at pornographic pictures on the Internet, or create their own pornographic material.

Two schools of thought have emerged about the effects of pornography and whether or not there is a causal connection between pornography and violence against women. On one side of the debate are those who argue that pornography has no harmful effects. In fact, some early research on pornography found it to produce a "cathartic effect" and thereby to reduce the amount of sexual assault (Ben-Veniste, 1971; Kutchinsky, 1971). As a result, laws restricting the production, sale, and distribution of pornography were relaxed and pornography became a more prevalent part of American culture (Russell, 1993).

On the other side of the debate, many feminists have argued that pornography is associated with violence against women and contributes to the high incidence of rape in this country (Russell, 1993). Evidence documenting the harmful effects of pornography for women has led some feminists to organize and fight against the pornography industry in a variety of ways including engaging in acts of civil disobedience, boycotting publishers of pornography,

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Pornography and Attitudes Supporting Violence Against Women: Revisiting the Relationship in Nonexperimental Studies

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A meta-analysis was conducted to determine whether nonexperimental studies revealed an association between men's pornography consumption and their attitudes supporting violence against women. The meta-analysis corrected problems with a previously published meta-analysis and added more recent findings. In contrast to the earlier meta-analysis, the current results showed an overall significant positive association between pornography use and attitudes supporting violence against women in nonexperimental studies. In addition, such attitudes were found to correlate significantly higher with the use of sexually violent pornography than with the use of nonviolent pornography, although the latter relationship was also found to be significant. The study resolves what appeared to be a troubling discordance in the literature on pornography and aggressive attitudes by showing that the conclusions from nonexperimental studies in the area are in fact fully consistent with those of their counterpart experimental studies. This finding has important implications for the overall literature on pornography and aggression. Aggr. Behav. 35:1–7, 2009. © 2009 Wiley-Liss, Inc.

INTRODUCTION

In a meta-analysis conducted by Allen et al. [1995b] the investigators failed to find a significant association between attitudes supporting violence against women and pornography consumption in nonexperimental studies. This result is both at odds with results emerging from experimental studies and the overall literature in the area including other meta-analyses by Allen and associates. Here a consistent significant association between pornography and various dependent measures including both attitudes supporting violence against women and actual aggressive behavior has been found [Allen et al., 1995a,b, 2000].

For many researchers, the incongruity between the results emerging from experimental vs. nonexperimental studies concerning the association between attitudes supporting violence against women and pornography has understandably raised doubts about the ability of generalizing the conclusions emanating from experimental studies to "real world" settings [e.g., Lo and Ran, 2005; Seto et al., 2001]. In addition, if such doubts are well founded, they also constitute a major challenge to models positing that attitudes supporting violence against women are one of the interacting pathways mediating and moderating behavioral effects of pornography, e.g., The Confluence Model of Sexual Aggression [Malamuth et al., 1995].

However, as elaborated upon below, serious doubts may be raised about the accuracy of the conclusions reached by Allen et al. [1995b] in their meta-analysis of the relationship between attitudes supporting violence against women and pornography in nonexperimental studies. On this basis, we conduct a new and up-to-date meta-analysis that corrects for problems and questionable decisions in the Allen et al. [1995b] meta-analysis. In addition, we examine the potential relationship between attitudes supporting violence against women and content of pornography across included studies as violent forms of pornography have been reported to

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be more clearly associated with risk factors pertaining to sexual aggression than nonviolent forms [e.g. Boeringer, 1994].

Definitions

The widely accepted conceptualization of "attitudes" usually incorporates three components including affective responses, cognitive evaluations, and behavioral predispositions toward an entity [e.g., Breckler, 1984]. When applying this approach to defining "attitudes supporting violence against women" and deciding which studies should be included within a meta-analysis of this area, we included various scales assessing (a) affective responses to acts such as rape, other types of sexual aggression, and partner violence, (b) evaluative cognitions, and (c) behavioral predispositions or attractions toward such aggressive acts [e.g., Malamuth, 1981, 1989a,b]. Thus, we follow the lead of Allen et al. [1995b] although these investigators used the term "rape myth acceptance" rather than "attitudes supporting violence against women." We believe that this latter term better describes the conceptual territory encompassed by the various scales included.

The term "pornography" refers to sexually explicit materials intended to create sexual arousal in the consumer. Nonviolent pornography is defined as sexually explicit materials without any overt coercive content, but which may sometimes imply acts of submission and/or coercion by the positioning of the models, use of props or display of unequal power relationships. Violent pornography is defined as sexually explicit materials in which nonconsensual, coercive, and/or violent sexual relations are explicitly portrayed [see also Senn and Radtke, 1990].

The Basis for Predicting Associations

The basis for predicting associations between exposure to violent pornography and aggressive tendencies, including attitudes supporting violence against women, may be viewed as in keeping with more general models of the impact of violent media on aggressive tendencies [e.g., Anderson and Carnagey, 2004; Huesmann and Kirwil, 2007], although additional mechanisms may also be at play when images of sex and aggression are intermingled [e.g., Anderson and Anderson, 2008; Donnerstein and Hallam, 1978].

The proposed processes responsible for predicting an association between nonviolent pornography and aggressive responses, including attitudes supporting violence against women, rely on the fact that nonviolent pornography often portrays women as highly sexually promiscuous and frequently as being dominated and "used" by males. These images may prime and reinforce various sexually aggressive schemata and "rape myth" attitudes, e.g., that some women deserve to or enjoy being harassed, maltreated sexually, or raped [Berkel et al., 2004; Lonsway and Fitzgerald, 1995; Milburn et al., 2000]. The proposed associations may not occur for most men, but be particularly likely for men who hold hostile/power schemas associated with women and sexuality and/or adhere to attitudes that dichotomize women into "whores" vs. "madonnas" [see also Bargh et al., 1995; Edelman, 2009; Kingston et al., 2008; McKenzie-Mohr and Zanna, 1990; Vega and Malamuth, 2007; Zurbriggen, 2000].

METHOD

Problems in the Allen et al. [1995b] Meta-analysis

First, in our opinion, half of the eight studies included in the meta-analysis of Allen et al. [1995b] should not have been included due to lack of fit in concept definitions, sampling procedures, subject samples, and/or the assessment instruments used. These four studies include: Burt [1980], Mosher [1988], and Padgett et al. [1989, two studies]. For illustration purposes we will discuss only one example here namely Burt [1980]. However, a more detailed description of the reasons why the above studies were excluded may be obtained from the first author. In the study by Burt [1980], there is a clear error in what type of media was classified as "sexually explicit media" or "pornography." The media assessed by Burt actually consisted of "exposure to media treatments of sexual assault," defined as "television, motion picture, dramatic, and newspaper treatments of rape or sexual assault" (p 221). Such media typically document the horrors of rape, rather than show sexually explicit images designed to sexually arouse the consumer (i.e. pornography). Importantly, the same theoretical models (e.g., social learning theory) that would predict a positive association between pornography use and attitudes supporting violence against women would in fact predict the opposite, i.e. a negative association, for this type of documentary media. For this reason we believe that Burt [1980] should not have been included in the meta-analysis.

Second, in the Allen et al. [1995b] study, we found a mistake in the statistical analyses concerning the likely presence of a moderating variable.[1] This error was graciously acknowledged by Dr. M. Allen (personal communication, November 25, 2005). Meta-analyses commonly present a statistical test of heterogeneity in an attempt to establish whether all studies are evaluating the same effect [Higgins et al., 2003; Hunter et al., 1982; Leandro, 2005]. A failed test of heterogeneity as given by a significant χ^2 indicates the likely presence of a moderating variable. A nonsignificant χ^2 indicates the likely absence of a moderating variable and hence homogeneity across included studies. Allen, Emmers et al. erroneously reported that "after deleting the Check [1985, Experiment 2] and Malamuth and Check [1985, Nonexperimental] studies, the new average correlation was homogeneous and that the sample probably did not contain a moderating variable" (p 18). However, our reanalysis showed that the new average correlation in fact was heterogeneous, indicating the likely presence of a moderating variable ($\chi^2_{(5)} = 14.23$, $P = .0142$, $I^2 = 65\%$ using Cochran's Q and Higgin's I^2). This calls for a more cautious or even different interpretation of the results and following conclusions of this particular part of the Allen, Emmers et al. meta-analysis.

The Present Meta-Analysis

Procedure. We used two methods for collecting studies. First, we examined previous meta-analyses and reviews on pornography for relevant studies [in particular Allen et al, 1995a,b; Bauserman, 1996; Fisher and Grenier, 1994; Malamuth et al., 2000; Oddone-Paolucci et al., 2000]. Second, we conducted a thorough literature search of the following databases: PsychInfo, PsycArticles, PubMed, and Sociological Abstracts using erotica*, porn*, sexual media*, rape*, and violence* as key words searching the databases from inception to February 2009. This resulted in a large number of references. We then reviewed each reference carefully according to the following four inclusion criteria:

1. The definition of pornography matched or approximated our own. That is, "sexually explicit materials intended to create sexual arousal in the receiver."
2. The study included a measure of attitudes supporting violence against women.
3. The study included enough statistical information on male participants to estimate the association between pornography consumption and attitudes supporting violence against women.
4. The study used nonoffender samples.

The first three criteria match closely those used by Allen et al. [1995b] in their meta-analysis. However, Allen, Emmers et al. included in some studies the data for both female and male participants. As research has consistently shown gender to be a strong differentiating variable in this area of research [e.g., Bryant, 2009; Hald, 2006; Hald and Malamuth, 2008] we elected not to do so, with one exception. In the Emmers-Sommer and Burns [2005] study ten women (2.4%) was included in the calculation of results. We thought it unlikely that such a small percentage would have much overall impact and decided to include the study. The fourth criterion does not explicitly replicate Allen, Emmers et al., although Allen, Emmers et al. also did not include studies using offender populations. Our rationale for excluding studies using offender samples pertain to the fact that various researchers have raised questions about the veridicality and validity of self-reports of convicted offenders as compared with nonoffender samples [e.g., Hanson and Bussiere, 1998; Hare, 1985].

A total of nine studies and 2,309 participants were included in the final meta-analysis (Table I) [Barak et al., 1999; Demaré et al., 1993]. We acknowledge that the inclusion of only nine studies in the final meta-analysis may call for a more cautious interpretation of results.

Measures. The following measures of attitudes supporting violence against women were used in the studies included in the meta-analysis:

The acceptance of interpersonal violence scale (AIV—6 items): The AIV assess attitudes condoning the use of force and violence in relationships. The internal reliability of the AIV is .59 as measured by Cronbach's α [Burt, 1980].

The adversarial sexual beliefs scale (ASB—9 items): The ASB investigates the degree to which participants perceive male and female relations as "fundamentally exploitative" [Burt, 1980]. The

[1]Depending on the particular focus of the study, individual differences such as attraction to sexual aggression or attitudes supporting violence against women may be treated as a mediator, a moderator or an outcome variable. Mediators reflect the generative mechanisms or processes through which the identified variable influences the outcome. That is, how an effect came about. In contrast, a moderator is a third variable that affects the direction and/or the strength of a relationship between two variables. In statistical analyses this is revealed as an interaction effect and in meta-analyses as a failed test of heterogeneity.

TABLE I. Studies Included in (1) The Meta-Analysis and (2) The Sensitivity Analyses

Study/Author	Year	Attitudes supporting violence against women scales used	*N*	Correlation[a]
1. Meta-analysis				
Barak, Fisher, Belfry, and Lashambe	1999	LSH, RMA	31	.310
Boeringer	1994	LF, LR	477	.283
Check	1985	AIV, ASB, LF, LR, RMA	434	.111
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.142
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.090
Garcia	1986	ATR	115	.045
Lam and Chan	2007	PSH, SHP	227	.208
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
2A. Sensitivity analysis I: Nonviolent pornography				
Boeringer	1994	LF, LR	477	.205
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.084
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.030
Garcia	1986	ATR	115	.012
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
2B. Sensitivity analysis II: Violent pornography				
Boeringer	1994	LF, LR	477	.361
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.171
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.210
Garcia	1986	ATR	115	.070

Note: Attitudes supporting violence against women scales used: AIV = Acceptance of Interpersonal Violence, ASB = Adversarial Sexual Beliefs, ATR = Attitudes Toward Rape, LF = Likelihood of Force, LR = Likelihood of Rape, LSH = Likelihood of Sexual Harassment, PSH = The Perception of Sexual Harassment Scale, RMA = Rape Myth Acceptance, SHP = The Sexual Harassment Proclivities Scale.
[a]If an overall *r* was not provided, an overall average *r* was calculated on the basis of the *r*-values of each relevant scale included as suggested by Lipsey and Wilson [2001].

internal reliability of the ASB is .80 as measured by Cronbach's α [Burt, 1980].

The rape myth acceptance scale (RMA—11 items): The RMA measures the degree to which participants believe in stereotypical rape myths. The internal reliability of the RMAS is .88 as measured by Cronbach's alpha [Burt, 1980].

The attitudes toward rape scale (ATR—15, 25, or 55 items): The ATR includes eight factors. High scores on these factors reflect various aspects contributing to a general belief in rape myths, e.g., that women cause rape through their appearance and/or behavior [Field, 1978; Garcia, 1986]. The reliability of the ATR ranges between .81 and .93 as measured by Cronbach's α [Daugherty and Dambrot, 1986].

The likelihood of rape scale (LR), *the likelihood of sexual force* (LSF), and *the likelihood of sexual harassment* (LSH) *scale*: The LR, LSF, and LSH are single item scales used to measure the hypothetical potential of a man to rape or commit similar sexual aggressive acts given the assurance that he would face no punishment [Malamuth, 1981]. Scores on these scales have been shown to have considerable construct and predictive validity and to correlate highly with a much more elaborate measure of attraction to sexual aggression [e.g., Malamuth, 1989a,b; Malamuth and Dean, 1991].

The perception of sexual harassment scale (PSH–9 items): The PSH examines perceptions of sexual harassment [Biber et al., 2002]. The reliability of the PSH is .72 as reported by Lam and Chan [2007] and measured by Cronbach's α.

The Sexual Harassment Proclivities Scale (SHP–10 items): The SHP assess participants' proclivity to engage in sexual harassment [Pryor, 1987]. The reliability of the PSH (5 items) is .83 as reported by Lam and Chan [2007] and measured by Cronbach's α.

All included measures used Likert scales where higher scores indicate a higher degree of attitudes supporting violence against women.

RESULTS

Owing to the findings of heterogeneity in the analyses reported below all analyses were conducted using both a fixed effect model and a random effect model and then compared. As the results of all

analyses using either model were very similar, only the result using the fixed effect model is reported here with the result using the random effect model being available from the first author [see also Higgins and Thompson, 2002; Leandro, 2005; Song et al., 2001].

The overall meta-analysis included nine studies and 2,309 participants. The average correlation between pornography consumption and attitudes supporting violence against women using a fixed effect model was significant ($r = .18$, $P < .001$; CI 95% (.14; .22)). However, a failed test of heterogeneity and inconsistency across studies was found indicating the likely presence of a moderating variable ($\chi^2_{(8)} = 18.21$, $P < .001$, $I^2 = 56\%$, using Cochran's Q and Higgin's I^2).

Both theory and the experimental research literature suggest that violent pornography is more likely to have association with attitudes supporting violence against women than nonviolent pornography [e.g., Allen et al., 1995b]. Consequently, two sensitivity analyses based on type of pornography were conducted. Only studies providing the necessary differentiation of statistical information were included.

Across six studies and 1,617 participants, the average correlation between nonviolent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ($r = .13$, $P < .001$). However, a failed test of heterogeneity and inconsistency across studies was found ($\chi^2_{(5)} = 16.42$, $P = .006$, $I^2 = 70\%$, using Cochran's Q and Higgin's I^2) indicating the likely presence of a moderating variable.

Across four studies and 1,394 participants the average correlation between violent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ($r = .24$, $P < .001$). However, a failed test of heterogeneity and inconsistency across studies was found ($\chi^2_{(3)} = 14.22$, $P = .003$, $I^2 = 79\%$, using Cochran's Q and Higgin's I^2) indicating the likely presence of a moderating variable.

Using Fisher's Z transformation to compare the within-group correlations between violent and nonviolent pornography and attitudes supporting violence against women, it was found that the correlation between violent pornography and attitudes supporting violence against women ($r = .24$) was significantly higher ($P < .001$) than the correlation between nonviolent pornography and attitudes supporting violence against women ($r = .13$).

DISCUSSION

The result of the present meta-analysis shows a significant overall relationship between pornography consumption and attitudes supporting violence against women in *nonexperimental* studies. This relationship was found to be significantly stronger for violent pornography than for nonviolent pornography, although both types of pornography showed significant positive associations with attitudes supporting violence against women. The finding of heterogeneity in the meta-analysis underlines the importance of targeting moderators in pornography research [see also Kingston et al., 2009].

The results are in contrast to earlier conclusions reported by Allen et al. [1995b] both concerning the existence of an overall significant relationship between pornography consumption and attitudes supporting violence against women in *nonexperimental* studies and the finding of heterogeneity indicative of moderators in this relationship. Further, our reanalysis of the meta-analysis as originally reported by Allen, Emmers et al. showed that even in their originally reported meta-analysis heterogeneity indicative of moderators was found despite their reporting of the contrary.

Two important implications may be drawn from this study. First, the results correct a glaring discrepancy in the research literature by showing that the relationship between men's pornography consumption and their attitudes supporting violence against women in nonexperimental studies are in fact fully consistent with those previously found in experimental studies focusing on the same association.

Second, the results highlight the role of individual differences as strong moderators of the association between pornography and attitudes supporting violence against women. Such moderation has now also been well documented in this research area with other dependent measures [e.g., Bryant, 2009; Kingston et al., 2008, 2009; Malamuth and Huppin, 2005; Vega and Malamuth, 2007]. More specifically, it has been consistently found that an association between pornography consumption and aggression is particularly likely for men who score high on other risk factors for sexual aggression.

Does a consistent significant, but relatively small association between pornography consumption and attitudes supporting violence against women in nonexperimental studies have practical significance? We believe it does. As shown by e.g., Rosenthal [1986] even small significant associations may translate into considerable social and practical significance across larger population samples. In addition, the type of attitudes studied here have been found to consistently predict "real world" sexually aggressive proclivities and behaviors in

both cross-sectional and longitudinal research [e.g., Hall et al., 2006; Malamuth et al., 1995; Meyer, 2000; Voller et al., 2009]. Finally, as has been well documented in the area of sexual aggression research virtually all risk factors have only relatively small associations with the dependent variables of interest. However, it is the confluence or interactive combination of these variables that can have strong predictive utility and thus social and practical significance [e.g., Malamuth, 1986; Malamuth et al., 1995, 2000; Vega and Malamuth, 2007].

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Pornography and Sexual Aggression: Are There Reliable Effects and Can We Understand Them?

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In response to some recent critiques, we (a) analyze the arguments and data presented in those commentaries, (b) integrate the findings of several meta-analytic summaries of experimental and naturalistic research, and (c) conduct statistical analyses on a large representative sample. All three steps support the existence of reliable associations between frequent pornography use and sexually aggressive behaviors, particularly for violent pornography and/or for men at high risk for sexual aggression. We suggest that the way relatively aggressive men interpret and react to the same pornography may differ from that of nonaggressive men, a perspective that helps integrate the current analyses with studies comparing rapists and nonrapists as well as with cross-cultural research.

Key Words: mass media, pornography, rape, sexual aggression, sexually explicit media.

Anyone reading some of the recent reviews of the literature on the effects of sexually explicit media would have to be perplexed. On the one hand, some researchers have concluded that certain reliable effects have been demonstrated (e.g., Felson, 1996; Linz & Malamuth, 1993; Malamuth, 1989, 1993; Russell, 1988, 1998), whereas others strongly dismiss the existence of any reliable effects (e.g., Brannigan, 1997; Fisher & Grenier, 1994). With this review, we hope to contribute to a better understanding of the relationship, if any, between individual differences in the degree to which men use sexually explicit media and their overt acts of sexual aggression. Our goal is to shed some light on these contradictory conclusions.

We are grateful to Dr. Eugenie Dye for comments on earlier drafts of this paper. Some preliminary analyses of the pornography variable in this database were also incorporated in a chapter by Malamuth (1998b) using an odds-ratio "risk" approach. Although the analyses described here are much more elaborate and detailed, the overall conclusions are clearly consistent with those findings.

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This article is organized into two separate but interrelated major sections. The first is a critical examination of studies contending that there have not been any reliable connections found between pornography and aggression. Fortunately, there have been several recent meta-analytic studies that summarize the research literature. We, in turn, review the findings of these meta-analyses as part of our rebuttal. However, there is one area of the literature in which relatively little research is available, and consequently there has not been a meta-analysis conducted. This area is concerned with the possible relationship between pornography use and individual differences in sexual aggression in the noncriminal population. Using a large national representative sample, we present a series of statistical analyses to address this issue in the second major section of this chapter. In these analyses, we focus on key issues raised by researchers who criticize limitations in other investigations. We believe that the two sections of this article lead to some common conclusions, which we integrate within a model of the characteristics of men who are relatively likely to commit sexually aggressive acts.

A REVIEW OF PORNOGRAPHY RESEARCH

Overview

The Pornography Industry

Forbes magazine recently described the companies that produce sexually explicit depictions as constituting a 56 billion dollar global pornography industry that is becoming increasingly mainstream. In fact, some internet pornography companies are now listed on the NASDAQ stock exchange (Morais, 1999). Pornographic depictions are much more frequently used by male than by female consumers, and most of the scientific research in this area has dealt with their effects on male consumers (Malamuth, 1996). Despite (or perhaps because of) the pornographic industry's tremendous size and growth, sexually explicit materials continue to engender much political, legal, moral, and scientific debate (Linz & Malamuth, 1993; Russell, 1998; Strossen, 1995).

Defining Pornography

Numerous efforts have been made to define pornography and distinguish it from other terms, such as erotica. A consensus does not exist among laypersons, policy makers, or the legal system. Supreme Court Justice Stuart Potter admitted that although he could not define pornography, even "he knew it when he saw it" (*Jacobellis v. Ohio*, 1964). Through this assertion, he implied that most observers, upon inspection of certain materials, would agree whether or not they were

pornographic. Justice Potter's claim has become famous because it highlights the difficulties involved in explicitly defining pornography. Although some commentators have suggested that such definitional difficulties render the term *pornography* virtually meaningless, we do not believe this conclusion is necessarily warranted. Many linguistic constructs that are regularly used by both laypersons and scientists have proven very difficult to define in explicit, precise ways (e.g., see Silverberg & Gray, 1992). Nevertheless, such terms are frequently used in everyday and scientific discourse, and useful conceptual and operational definitions may be provided.

Linz and Malamuth (1993) noted that the various definitions of pornography that are typically used presuppose beliefs about what it does or does not do. Formulation of these has largely been guided by the Conservative, Radical Feminist, or Liberal perspectives, reflecting their political and, in some cases, religiously based views on pornography. These perspectives differ in the way they frame the importance of this topic (e.g., perceiving pornography as primarily relevant to issues such as moral decay, subjugation of women, free speech, etc.).

Many researchers have sought to distinguish between different types of sexually explicit media. They suggest that more differentiated distinctions should be made through use of specific terminology instead of blanket designations of all sex-related materials under an all-encompassing label, such as "pornography." For example, Senn and Radtke (1990) differentiated between erotica, nonviolent pornography, and violent pornography based on a variety of dimensions and demonstrated that undergraduate female students could quite effectively apply such distinctions to the content of sexually explicit magazines. Although such distinctions have proven very useful in laboratory studies of the effects of various sexually explicit materials (Malamuth, 1989, 1993; Osanka & Johann, 1989), it is much more difficult to effectively operationalize such distinctions in naturalistic settings. For instance, most sexually explicit magazines containing some sexually violent content also include much sexually nonviolent content (e.g., Malamuth & Spinner, 1980), and it is typical for the consumers who view the more "extreme" type of stimuli to also consume the "milder" content (Malamuth & MacIlwraith, 1989). Moreover, individuals who are prone to sexual aggression may form violent sexual fantasies using sexually nonviolent depictions (Marshall, 1988).

For the purposes of the present review, we will use terms such as *sexually explicit media* and *pornography* interchangeably. In using such terms, no pejorative meaning is necessarily intended to refer to media that is aimed at sexually arousing the consumer. In keeping with the literature, we will use the terms *nonviolent pornography* and *consenting sexual depictions* to refer to sexually explicit images that do not contain coercion. The terms *violent pornography* or *sexually violent media* will be used to refer to materials that do contain coercive material. Sadomasochistic stimuli are a somewhat ambiguous category and have not been extensively studied, although they have sometimes been included in the sexually violent category.

Scientific Research

Definitions of pornography have been closely tied to the types of scientific studies that researchers have chosen to conduct. These studies, as noted previously, have largely been guided by the Conservative, Radical Feminist, and Liberal perspectives (Linz & Malamuth, 1993). Researchers have often addressed separate questions raised by each of these perspectives and have seldom pitted the predictions of one theory against the others. The Conservative perspective condemns the negative influence of pornography on the values of individuals and on social institutions such as the traditional family, and evidence showing changes in attitudes or values in such areas is considered important (e.g., Zillmann & Bryant, 1982). The Liberal perspective generally regards pornography as having negligible negative impact and sometimes even having beneficial effects. This perspective has also emphasized that the First Amendment should protect most forms of communication, with exceptions made only in areas such as direct incitement to immediate lawlessness (*Brandenburg v. Ohio,* 1969). The important research question guiding this perspective is to determine whether evidence of direct harm on criminal behavior (e.g., rape) results from exposure to pornography. The Radical Feminist perspective has emphasized pornography's negative effects on men's attitudes and behavior toward women, and on the power balance between men and women (MacKinnon, 1986, 1993; Russell, 1998). Evidence of changes in attitudes about violence against women or sexism as a function of exposure to pornography is considered important by advocates of this perspective.

In our view (e.g., Linz & Malamuth, 1993) each of these three perspectives has had some findings in support of its position. However, the key question focused on in the present article is whether any reliable findings have been found that are broadly applicable across the wide range of studies conducted in this area. Some writers assert that none have been found. For example, Fisher and Grenier (1994) focused their review and research on violent pornography. They noted that various researchers and government commissions have concluded that reliable effects have been found in this area. In fact, some countries have

changed their laws about what types of sexually explicit media are or are not restricted, partly justifying their distinctions between materials such as violent pornography and other stimuli on the basis of research findings (e.g., in Canada, see *Butler v. Her Majesty the Queen,* 1992). In contrast, Fisher and Grenier (1994) question the reliability of research findings, stating that when they "examined research evidence on effects of violent pornography, . . . a highly inconsistent pattern of empirical findings . . . emerged" (p. 24). To reinforce their conclusions, Fisher and Grenier provided a table of "conflicting research on effects of violent pornography," (p. 25) which they present, in two separate columns. In one column, they listed studies confirming that "violent pornography is associated with antiwoman thoughts and antiwoman acts" (p. 25). In the other column, they presented an equal number of studies which, according to Fisher and Grenier, "fail to confirm" such an association.

It is important to consider the representative quality and accuracy of the summary presented by Fisher and Grenier (1994) because their review has frequently been cited as ostensive proof that research in this area has not yielded any reliable effects (e.g., Barak & Fisher, 1997; Barak, Fisher, Belfry & Lashambe, 1999). For instance, Barak and Fisher (1997) referred to a growing body of literature as confirmation that the "effects of exposure to sexually explicit materials remain elusive" (p. 354), and that there exists a "highly inconsistent literature concerning effects of sexually explicit stimuli on men's attitudes and behaviors toward women" (p. 365). Similarly, Brannigan (1997) refers to the article by Fisher and Grenier (1994) as a "landmark" inquiry seriously questioning the value of media effects studies. Other scholars writing reviews of various literatures (e.g., Leitenberg & Henning, 1995) uncritically treat as comparable the original research and that of Fisher and Grenier's. We, however, question the representativeness of the findings cited by Fisher and Grenier, the accuracy of their descriptions of certain studies, and the validity of their research. We will therefore consider in some detail the Fisher and Grenier summary of the literature and their own related research presented after that summary.

There are several important concerns that can be raised about the approach used by Fisher and Grenier. Although they do not argue that their list of studies in the "supporting" and "opposing" columns is a comprehensive one, they certainly create the impression that theirs is a representative listing of the weight of the evidence. Such a presentation raises at least two interrelated concerns: First, within any study there may be several dependent variables, and the reviewers may have selectively referred to some of the findings and not others. For example, if several studies included the same three dependent variables, it would

not necessarily be the case that in all of these studies there would be clear effects on all of the variables, even if a "real" overall effect exists. Due to sampling error and other factors, one would need to consider the complete findings of each study, as well as the overall set of studies. Although some variability is inevitable even among very comparable studies, this research literature encompasses a broad spectrum of different independent variables, dependent variables, methodologies, research settings, experimenters, characteristics of participants, and sampling techniques. The quality of protocol standards differed from one study to the next, introducing many sources of variability. Reviewers wishing to emphasize the conflicting findings could do so easily by selecting a dependent variable within a particular study for which the effects were not significant, even though when taken as a whole the key hypothesis for that study was supported. This may be particularly problematic in studies including a major dependent variable for which the theoretical rationale has been clearly articulated but also added some other dependent measures of secondary interest, for which the theoretical rationale for expecting an effect is less clear. As indicated later in this review, we believe that Fisher and Grenier's review has used some research in this way. Secondly, when critiquing a large literature, reviewers may consciously or unconsciously select to emphasize only certain parts of the total literature, which may not be truly representative of the full range of studies available. Again, we believe this occurred in Fisher and Grenier's summary.

Keeping in mind these two types of concerns, we now turn to an examination of studies that Fisher and Grenier categorized as having failed to confirm the effects of violent pornography. We will then summarize the conclusions of meta-analytic studies that have objectively averaged the results of all available published studies meeting well-defined criteria.

A Critical Examination of Fisher and Grenier's (1994) Literature Summary

Overview

In our judgment, a careful examination of most of the studies listed by Fisher and Grenier (1994) as failing to confirm effects of violent pornography actually reveals considerable evidence to the contrary. To be fair to Fisher and Grenier, they do not claim that the each of the studies they cite necessarily failed to find any negative effect, but they select it to illustrate how a particular dependent variable within the study did not show an ostensibly expected effect. However, we believe that the particular examples they use are not very good illustrations of

the point they try to make. It is, therefore, worthwhile to consider in some detail all of the studies Fisher and Grenier categorized as failing to show effects.

Presented in Table 1 are all of the studies listed by Fisher and Grenier (1994) as "failing to confirm that violent pornography is associated with antiwoman thoughts and antiwoman acts" (p. 25). We present their summary of the findings and then our analyses. As indicated in this table, we believe that Fisher and Grenier did not make a convincing case, even taking these selected studies alone.

Fisher and Grenier's "Replication Attempt"

In addition to their summary of the literature in this area, Fisher and Grenier (1994) presented research that ostensibly tried to replicate the effects reported in research on violent pornography. Their presentation is designed to give the impression that after having objectively described studies both for and against the existence of effects, they proceeded to properly test the reliability of the effects that might help resolve these contradictions. Had this research attempted to delineate the relevant dimensions and/or repeatedly attempted to replicate as fully as possible the actual conditions of the key studies, even if the effects were not successfully replicated, it would indeed have been research of considerable value. Unfortunately, the research of Fisher and Grenier is seriously lacking in many areas. We find its methodological shortcomings to be at least as serious as the weakest studies in this literature. In our opinion, a fair attempt has not been made by Fisher and Grenier to replicate the key literature findings of the strongest studies. In fact, Fisher and Grenier ignored studies, such as the field experiment by Malamuth and Check (1981), replicated by Weisz and Earls (1995). Yet we consider (and in previous writings have emphasized) such a study to be the strongest single available demonstration of the "negative" effects of exposure to violent-sexual messages. It controlled for limitations related to "demand characteristics" and "ecological artificiality," issues highlighted by Fisher and Grenier. Instead, Fisher and Grenier focused on the part of the literature that consisted of laboratory research in which a relatively brief exposure to violent pornography was followed by an assessment of the immediate effects. We will, therefore, consider the comparability of the Fisher and Grenier research to such studies.

The research reported by Fisher and Grenier (1994) consisted of two studies. The first focused on the effects of exposure to violent pornography on men's fantasies and attitudes about women. The research of Fisher and Grenier combined in a single study several of the dependent

Table 1
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
Linz, Donnerstein, & Penrod (1986)	"Exposure to sexually violent films had *no effect* on men's rape myth acceptance" (p. 25).	The primary focus of this research was on the effects of exposure to "slasher films" depicting much suffering to the victim on the audience's emotional desensitization and not on attitudes such as rape myth acceptance. There was no condition that included the type of depiction most often shown in experimental research to affect attitudes of this type, such as depictions showing that women derive pleasure from being aggressed against (e.g., Malamuth & Check, 1981). There were several types of dependent measures included. Although Fisher and Grenier are correct in noting that there were no significant effects on rape myth acceptance (which, as noted, would appear unlikely with this type of exposure), significant predicted effects were found on measures assessing emotional and sympathetic reactions to rape victims. The findings did show that "subjects exposed to R-rated film violence against women showed a tendency to be less sympathetic to the victim of rape portrayed in the trial. . . . More robust was the finding that the R-rated violent-film subjects were less able empathize with rape victims in general when compared with no-exposure control subjects and subjects exposed to other types of films. Level of film exposure, however, affected specific sympathy and general empathy differently: Longer film exposure was necessary to affect the general empathic response. In this regard, the findings are similar to other investigations that have found less sensitivity for rape victims following exposure to violent pornography" (p. 766).
Malamuth & Check (1986)	"Exposure to sexually violent films had no effects on men's self-reported likelihood to rape. . . . Exposure to sexually violent films and sexually violent written stimuli, compared to equivalent	There are two important considerations here that Fisher and Grenier fail to note. First, seldom have previous researchers found that exposure to any type of pornography affected the self-reported, "likelihood of raping" dependent measure. This measure appears to

Table 1 (continued)
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
	exposure to sexually nonviolent materials, had no effect on aggression by men against a female confederate" (p. 25).	reflect a relatively stable attraction to sexual aggression (Malamuth, 1989a, 1989b) that is not changed by short-term exposures, as implemented in experimental studies. (As noted later in this article, however, such reported likelihood has been consistently found to correlate with long-term pornography use in naturalistic settings.) We are aware of only a couple of experimental studies reporting any effects of pornography exposure with this type of dependent measure, and these were quite limited. Check and Guloien (1989) found the effect only for high psychoticism participants and not for others, a moderating variable not assessed by Malamuth and Ceniti. The only other experiment that we could find reporting such an effect was never published, but was briefly described within a chapter by Donnerstein (1984). It differed considerably from Malamuth and Ceniti's study in several respects, including the lack of a neutral or no-exposure control group comparison. Second, Malamuth and Ceniti assessed only long-term effects (several days to 2 weeks after exposure). Such effects were not assessed in the other studies in the literature. Therefore, the fact that in the Malamuth and Ceniti study long-term effects were not found on reported likelihood of raping or on laboratory aggression is *not* inconsistent with the experimental literature as a whole, where the findings have shown short-term effects on laboratory aggression. These have typically been explained by short-term activation or priming of aggressive tendencies (Malamuth, 1989; Malamuth & Ceniti, 1986). Taken as a whole then, the Malamuth and Ceniti study does reveal the boundaries of the effects reported in the literature but does not reflect inconsistencies in the findings (as suggested by Fisher and Grenier).

Table 1 (continued)
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
Malamuth, Haber, & Feshbach (1980)	"Exposure to sexually violent materials decreased men's acceptance of violence against women" (p. 26).	Malamuth et al. assessed the impact of exposure to a sadomasochistic portrayal on reactions to a rape story. There was no direct measure of men's acceptance of violence against women, but one of the measures assessed punitiveness toward the rapist. It was found that males who had read the sadomasochistic version of the first story were more severe in their punitiveness toward the rapist than those who had read the nonviolent version. In addition, there were actually effects that may be considered negative effects of exposure to the sadomasochistic portrayals, but these were moderated by individuals' levels of aggression-anxiety. Men who were relatively low in anxiety about aggression and were exposed to the sadomasochistic version of the story tended to perceive that the rape victim experienced less pain and trauma and resisted the rapist less. High aggression-anxious males, on the other hand, tended to become more conscious of the plight of the rape victim and the pain she experienced. Finally, for males exposed to the sadomasochistic portrayal of pain infliction as a source of pleasure, greater perception of pain was associated with greater sexual arousal, in contrast to the reverse for males who were not exposed to such a sadomasochistic portrayal. Taken together, the findings of this study are not very accurately described by Fisher & Grenier.
Demare, Briere, & Lips (1988)	Self-reported use of sexually violent materials uncorrelated with rape myth acceptance, endorsement of interpersonal violence against women, adversarial sexual beliefs, or attitudes toward women.	This is indeed what was found in this study on these attittudes (and as shown in the meta-analyses discussed later it is the only segment of the research where reliable effects have been found). Fisher & Grenier then listed three studies which they claimed show that "sex offenders were no more likely than controls to use sexually violent materials" (p. 25). The three studies are those by Langevin et al. (1988), Marshall (1988), and Goldstein (1973). We believe that only

Table 1 (continued)
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
		the findings of the first of these are described accurately by Fisher & Greiner and, therefore, will discuss the other two studies next.
Goldstein (1973)	"Sex offenders were no more likely than controls to use sexually violent materials" (p. 25).	A more detailed description of the findings of Goldstein (1973) is presented in a book by Goldstein, Kant, & Hartmann (1973). It is reported there that although rapists reported less exposure to pornography in adolescence than the control comparison groups, there are various aspects of the data suggesting that the type of pornography rapists were exposed to and the degree to which they were affected by it may have differed. For example, rapists reported an earlier age of "peak experience" with pornography. In addition, they were far more likely to have encountered pornographic photos displaying explicit sexual acts (rather than nudes) at an early age and to have had a greater desire to imitate the activity portrayed in pornography (although they said they were less likely to have actually done it). Rapists were more likely to relate daily masturbation to thoughts of pornography, to have developed a stronger interest in pornography early in life, to have become repeatedly aroused by a particular theme, and to have more feelings of frustration and guilt related to their pornography exposure than control participants. Although Goldstein et al. (1973) did not specifically inquire about pornography involving coercive sex themes, contrary to the conclusions suggested by Fisher & Grenier, it is clear from Goldstein et al. (1973) interviews that media depictions involving sexual violence (e.g., motorcycle films depicting "gang bangs") relatively frequently became part of rapists' daydreams and fantasies. In addition, the researchers reported that 55% of the rapists (as compared to 9% of

Table 1 (continued)
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
		the controls) used scenes from pornography in their fantasies and daydreams.
Marshall (1988)	"Sex offenders were no more likely than controls to use sexually violent materials" (p. 25).	Marshall compared rapists, child incest molesters, nonincest child molesters and nonoffenders in their use of "hard-core" sexually explicit materials. He found that when comparing the "use of any type of 'hard-core' sexual stimuli," most groups of sexual offenders generally did use pornography more than nonoffenders. For example, in terms of current use, 67% of heterosexual child molesters and 83% of rapists, as compared to 29% of nonoffenders, reported currently using pornography. As well, offenders often reported using pornography "as an instigator" to their crimes (35% of rapists). Marshall collapsed his presentation of the results across different types of hard-core pornography and did not report the details of an actual separation by type of pornography. The only reference in his article to what may be labeled violent pornography is as follows: "Child molesters do not have remarkably higher access to 'kiddy porn' than do other subjects nor do rapists show particularly greater use of forced sex materials than do other subjects" (p. 278). Therefore, Marshall indicated that rapists used pornography of various types more than nonoffenders but that there was not a "particularly greater" use of violent pornography (although it certainly appears that they also used this type of pornography more than nonoffenders). Marshall further noted that a substantial number of rapists used consenting sex depictions to "incite rape images in the process of preparing himself to attack a woman" (p. 280). In considering the implications of his findings on the various types of sexually explicit media, Marshall concluded that

Table 1 (continued)
Critical Analysis of Studies Listed by Fisher & Grenier (1994) as Failing to Confirm That Violent Pornography is Associated With Antiwoman Thoughts and Acts

Study	Fisher & Grenier's Summary	Our Discussion of the Findings
		Any treatment program for these men must include consideration, not just of the rate and intensity of deviant thoughts, but also of the possible functional relationship between exposure to sexually explicit materials and these deviant thoughts. Similarly, treatment programs should attend to the possible link between exposure to such stimuli and the actual offensive acts of these men. Furthermore, one must also consider the way in which sexually explicit depictions may encourage, or at least support, negative attitudes toward women and children, particularly in sexual matters. (p. 285) It is surprising, therefore, that Fisher and Grenier would present this study as providing data that violent pornography is not associated with sexually aggressive characteristics. The only conclusion that appears justified from these data is that violent pornography was not found to be more highly associated with offender status, but that both types of pornography were more often used by rapists.

measures that have been studied separately in several different studies, and Fisher and Grenier also added other peripherally relevant measures.

Part of the study by Fisher and Grenier (1994) was focused on fantasies. It was supposedly an attempt to replicate the findings of Malamuth (1981). There is much literature showing that sexually coercive fantasies are not rare among both males and females (e.g., Greendlinger & Byrne, 1987). In order to assess the potential impact of exposure to violent pornography on the occurrence of such fantasies, it is necessary to create an environment in which participants feel comfortable in having and in reporting such fantasies. Because none of the participants in the study by Fisher and Grenier created such fantasies, it appears that these investigators failed to create such an environment. Fisher and Grenier would have provided far more convincing evidence of the lack of pornography's impact had they created an environment in which subjects did report some "typical" levels of sexually coercive fantasies in any of the exposure conditions, as was indeed the case in the original Malamuth (1981) study.

Let us turn to other aspects of this first Fisher and Grenier (1994) study. Subjects were randomly assigned to be exposed to one of several edited versions of a 9-minute film. The original version was used by Donnerstein and associates (e.g., Donnerstein, Donnerstein, & Evans, 1975) to measure short-term effects on laboratory aggression. We are not aware of any study in which this particular stimulus has been used to study effects on fantasies, beliefs, or attitudes. In previous studies showing effects from brief exposures, they have been shown only on very specific measures directly corresponding in their messages to the stimuli presented and generally only for individuals who are particularly predisposed to hold certain "rape myths" (e.g., Malamuth & Check, 1985). In addition, assessment was shortly after exposure, when "priming" effects were more likely to be detected. None of these conditions were met in the study by Fisher and Grenier because the link between the content of the exposure and dependent assessment was quite remote in content and time, and individual differences were not studied. After the brief exposure, participants were first asked to write down their sexual fantasies, and next they were given the projective Thematic Apperception Test. Then, they were administered a general measure of Attitudes Toward Women Scale (a measure that has never been shown to be influenced by exposure to violent or any other type of pornography). Then the Women as Managers Scale (Peters, Terborg, & Taynor, 1974), another measure that has never been reported to be influenced by pornography exposure, was administered, followed only then by two attitudinal measures used in some earlier research (the Acceptance of Interpersonal Violence scale

and the Rape-Myth Acceptance scale [Burt, 1980]).

Had Fisher and Grenier (1994) reported effects on the multifaceted scales measuring general attitudes about women (i.e., the Attitudes Toward Women and the Women as Managers Scale), it would have severely strained credibility. Such an effect would be rare indeed in media research generally and in the "violent pornography" literature specifically.

The second study reported by Fisher and Grenier (1994) also unfortunately appears of little scientific validity. Initially, there were 22 undergraduate male students in this study, but 8 "indicated considerable suspicion and awareness concerning the laboratory aggression paradigm, and these suspicious subjects were dropped from the data analysis" (p. 32). This means that more than one third of the participants were eliminated due to suspicion, a mortality rate invalidating the entire study.

There was only one condition reported in this study in which participants were exposed to violent pornography without any control group. Because there was only a single condition, we do not know whether violent pornography increased, inhibited, or had no effect on aggression. The dependent measure consisted of a procedure in which subjects could select any of three options: Proceed to the debriefing phase without giving any feedback to the confederate, give feedback over an intercom, or deliver an electric shock. Nine subjects chose to proceed immediately to the debriefing phase, three chose to speak to the confederate over the intercom, and two delivered the shock. But Fisher and Grenier (1994) emphasized that these two participants had earlier expressed interest in using the electronic apparatus, and therefore even their responses may be considered to be nonaggressive. Because the aggression levels for all subjects were, therefore, very low or nonexistent, Fisher and Grenier contended that in this more realistic set of conditions they showed that exposure to violent pornography does not increase aggression.

We believe that their own data clearly reveal that they failed to create conditions whereby the potential influences on aggression could be meaningfully studied. Clearly, in naturalistic settings, male aggression against women is unfortunately a frequent and serious problem. In order to properly test whether violent pornography increases the likelihood that some men might be aggressive, laboratory researchers must create, within ethical limitations, the maximum conditions to detect the effect. A laboratory analogue with some potential for generalization must at least demonstrate that the behavior being studied occurs in some conditions at a frequency level that enables analysis of the factors that increase or decrease

it. No one would deny that there are many conditions under which exposure to violent pornography is not followed by aggression. In fact, in the early research on violent pornography and aggression, it was demonstrated that creating a relatively inhibited social environment for the occurrence of aggression may totally nullify the priming influence of violent pornography. Creating a disinhibited environment, in contrast, may enable effects to be observed (Malamuth, 1978). By Fisher and Grenier's own admission, they created a set of conditions that did not produce aggression. Although they claimed that giving subjects an alternative as to whether to aggress or not created ecological validity, we believe that they failed to create conditions under which the effects of different exposures on aggression could be properly assessed.

Meta-Analyses

Differences Among Studies

Varied methodologies and dependent measures have been used to study the effects of pornography. Most of the studies conducted within North America, particularly the United States, may be described along two orthogonal dimensions based on whether (a) they used experimental (random assignment to conditions) or correlational methodology and (b) the dependent variable they assessed was a response presumably affecting sexual aggression (e.g., attitudes supporting such aggression) or some measure of actual aggression. Such studies may therefore be organized into a 2 x 2 table, but with one of the cells in this table having two subtypes of studies (see Table 2).

Table 2
An Organizational Framework for the Differing Pornography Studies and Corresponding Meta-Analytic Summaries

		Method	
		Experiments	Correlational Studies
Dependent Measure	Attitudes	Experiments on attitudes (meta-analysis by Allen, Emmers, et al., 1995)	Naturalistic studies of correlations between pornography and attitudes (meta-analysis by Allen, Emmers, et al., 1995)
	Aggressive Behavior	Experiments on lab aggression (meta-analysis by Allen, D'Allessio, & Brezgel, 1995)	(a) Comparing criminals vs. noncriminals on pornography use (meta-analysis by Allen et al., 2000) (b) Within noncriminals, (meta-analysis not available)

As indicated in this table, one type of research involved experiments (usually, but not exclusively in laboratory settings). In these experiments whether participants were exposed to some type of pornography was manipulated. Whether there were resulting differences between the experimental and control groups in responses such as attitudes accepting of aggression against women was then examined.

The second type of research is detailed in the upper right corner of Table 2. In this research whether differences among men in such attitudes are correlated with self-reported aggression in naturalistic settings was assessed.

In the third type of research (see bottom left corner of this table), participants were exposed to some type of pornography, and the type of aggressive behavior that can be elicited in a laboratory setting (e.g., delivery of noxious stimuli to another person) was measured. The fourth category (see bottom right corner of table) consists of correlational studies focusing on the potential relationship between pornography consumption and actual sexual aggression in naturalistic settings. Here there are two subtypes of research studies. The first is focused on differences in pornography use between individuals convicted of crimes, such as rape (i.e., criminals or offenders) versus men from the general population (i.e., noncriminals or nonoffenders). The second is focused only on noncriminals, but the potential association between pornography use and individual differences in reported sexual aggression (which did not result in criminal conviction) is explored. Because a majority of acts of sexual aggression, including rape, are never successfully prosecuted (see the discussion of this issue later in this review) unprosecuted acts of aggression are an important comparison.

In addition to these types of studies, there have been a number of time series studies in other cultures (e.g., Diamond & Uchiyama, 1999; Kutchinsky, 1991) and some state level comparisons within the United States (Baron & Straus, 1987). Later, we will discuss the relevance of these cross-cultural findings to the research conducted within North America (which will be the primary focus here).

What Is Meta-Analysis?

Meta-analysis provides a systematic method for the synthesis of a research literature by using explicit standards for judgments and conclusions. It consists of statistical techniques that provide a quantitative summary of all of the available data from the existing literature that meet specified criteria. Because a meta-analysis has very explicit rules, other scholars can easily replicate it.

Importantly, there are aspects of the analysis that indicate whether the literature is homogeneous (which would indicate potential inconsistency in the findings) and follow-up moderator analyses that may help identify the basis for differences among studies. Meta-analysis has been judged a superior method of literature review compared to other traditional forms of review by various commentators (see Allen, D'Alessio, & Brezgel, 1995, for a more detailed discussion).

Meta-Analyses of Pornography Research

Several meta-analytic studies have been published that integrate findings in the pornography literature (Allen, D'Alessio, & Brezgel, 1995; Allen, D'Alessio, & Emmers-Sommer, 2000; Allen, Emmers, Gebhardt, & Giery, 1995; Hearold, 1986; Oddone-Paolucci, Genuis, & Violato, 2000; Paik & Comstock, 1994). We believe that those conducted by Allen and associates (Allen, D'Alessio, & Brezgel, 1995; Allen, D'Alessio, & Emmers-Sommer, 2000; Allen, Emmers, Gebhardt, & Giery, 1995) are particularly useful because they meet rigorous standards. For example, they used the study's sample size when weighing the average effect. Also, when encountering possible heterogeneous average correlations, they tested for moderators. The other meta-analyses did not use all these important procedures. We will, therefore, focus on the findings of the three meta-analyses by Allen and associates, whose findings are generally consistent with the other three meta-analyses (which actually report even stronger effects).

Fortunately, the meta-analyses conducted by Allen and his associates correspond well to virtually every category presented in Table 2. The only exception is the subtype of research comparing the possible correlation between pornography use and sexual aggression within the noncriminal population. Therefore, after presenting a summary and discussion of the meta-analyses conducted by Allen and his associates, we will turn our attention to this one area where a meta-analysis is not currently available. Except as otherwise noted, these meta-analyses generally revealed homogeneous effects, thus contradicting Fisher and Grenier's (1994) contention regarding the lack of consistency in the findings.

Following is a summary of the findings of the various meta-analyses published by Allen and associates in the past 5 years.

Effects of Pornography on Attitudes Supporting Sexual Aggression

Allen, Emmers, et al.'s (1995) meta-analysis on the relationship between pornography exposure and attitudes supporting sexual aggression (referred to in their paper as *rape myth acceptance*) includes both experiments and correlational studies. In this section we focus on the former and discuss the latter type of studies subsequently.

Most of these experiments (which included random assignment to conditions, enabling cause and effect conclusions) were conducted in laboratory settings, but some of the research was in field settings (e.g., Malamuth & Check, 1981). There were a total of 16 experiments with 2,248 participants. The overall average effect combining all of the studies, which included depictions of consenting sexual activity (i.e., nonviolent pornography) and violent pornography showed a significant increase (r = .15) in attitudes supporting sexual aggression following pornography exposure, and this effect held when nonviolent and violent pornography were examined separately (see Table 3). Although the effect size appears slightly higher for nonviolent pornography than for violent pornography, in eight studies both types of the materials were actually included, therefore enabling a more direct comparison. Here it was found that violent pornography resulted in significantly greater increase in attitudes supporting aggression than did nonviolent pornography.

Effects of Pornography on Laboratory Aggression

In another meta-analysis, Allen, D'Alessio, et al. (1995) empirically summarized the findings of studies on the effects of exposure to different types of pornography on laboratory aggression. In these studies (i.e., experimental studies), random assignment to conditions was used. Thus it is feasible to reach cause and effect conclusions with confidence. Considerable research supports the validity of such laboratory measures as indicators of aggressivity (Bushman & Anderson, 1998).

Allen, D'Alessio, et al.'s (1995) meta-analysis included a total of 33 studies with 2,040 participants. As indicated in Table 3, although the overall effect (r = .13) shows that exposure to pornography does cause an increase in behavioral aggression, follow-up moderator analyses revealed different effects as a function of the type of stimuli used. Exposure to nudity alone (9 studies) was found to *reduce* aggression, whereas exposure to either nonviolent (24 studies) or violent depictions (7 studies) of sexual activity *increased* aggression.

In sum, experimental research shows that exposure to nonviolent or violent pornography results in increases in both attitudes supporting sexual aggression and in actual aggression. Consideration of nudity alone was included only in the aggressive behavior studies, and these showed reduced aggression following such exposure.

Pornography and Attitudes Favoring Sexual Aggression (in naturalistic settings)

Although correlational studies do not enable cause and effect conclusions, they often have the advantage of assessing responses occurring in

Table 3
Meta-Analytic Studies of Pornography Research

Meta-Analytic Study	Method	Participants	Stimulus	Dependent Measure	Effect Size	N	Conclusion
Allen, Emmers, et al. (1995)	Correlational and Experimental combined	Students		Attitudes for Sex Aggression	.10*	4,268	More pornography use, more support aggression
	Correlational only		All Pornography use combined		.06	2,020	No reliable effect
	Experimental only		Pornography use combined vs. control		.15*	2,248	More pornography use, more support aggression
			Nonviolent Pornography only vs. control		.13*	1,048	Nonviolent pornography increases support for aggression
			Violent Pornography only vs. control		.11*	719	Violent pornography increases support for aggression more than control
			Studies with both nonviolent pornography and violent pornography		.16*	762	Violent pornography increases support more than nonviolent pornography, though both significant
Allen, D'Alessio, & Brezgel (1995)	Experimental	Students	All pornography combined vs. control	Laboratory aggression	.13*	2,040	Pornography increases aggression
			Nudity vs. control		-.14*	403	Nudity reduces aggression
			Nonviolent pornography vs. control		.17*	1,229	Nonviolent pornography increases aggression

Table 3 (continued)
Meta-Analytic Studies of Pornography Research

Meta-Analytic Study	Method	Participants	Stimulus	Dependent Measure	Effect Size	*N*	Conclusion
			Violent pornography vs. control		.22*	353	Violent pornography increases aggression
Allen et al. (2000)	Correlational	Offenders vs. nonoffenders	Pornography use	Overall measure	.06	2,543	No difference
				Frequency of use	-.05	1,212	No difference
				Age of first exposure	.03	903	No difference
				Sexual "acting out" after pornography use	.23*	1,261	Offenders more likely to "act-out" after pornography use (masturbation, consensual sex, or forced sex)
			All pornography	Physiological sexual arousal	.15*	2,099	Offenders more aroused by all pornography combined
			Consenting pornography	Physiological sexual arousal	-.26*	625	Offenders less aroused by consenting sex
			Violent pornography	Physiological sexual arousal	.39*	207	Offenders more aroused by violent pornography

N = number of participants in total of studies combined.
*Indicates statistical significance of average effect across studies.

naturalistic settings. Allen, Emmers, et al.'s (1995) meta-analysis included eight studies that examined such correlations between the amount of pornography use and various types of attitudes supporting sexual aggression. There were a total of 2,020 participants, mostly college students, in these studies (see Table 3). The meta-analysis yielded a modest average positive correlation (r = .06) which the researchers concluded does *not* show a significant, reliable relationship (see Table 3). In this analysis, there was also some ambiguity regarding whether a moderator relationship existed (see Footnote 4 of Allen, Emmers, et al.), but the researchers concluded that "this sample probably does not contain a moderating variable" (p. 18).

Pornography and Aggression (in naturalistic settings)

As noted earlier, there are two types of relevant research studies that are concerned with the association between pornography use and aggression in naturalistic settings. In one, criminals are compared to noncriminals. In the other, associations within the noncriminal population are examined.

Criminals versus noncriminals. Allen et al. (2000) conducted a meta-analysis focusing on the pornography use of convicted sex offenders, as compared to those of men from the noncriminal general population. As indicated in Table 3, they examined several types of dependent measures: (a) frequency of pornography use, (b) age of first exposure, (c) the degree to which pornography was a direct prelude to some sexual act (masturbation, consensual sex, or forced sex), (d) and degree of sexual arousal, measured by direct genital measures of such arousal.

The findings across all of the 13 studies and measures combined showed a slight difference, with criminality associated with pornography (r = .06). Hence this finding was not judged to be a reliable effect. Similarly, an analysis focusing only on the frequency of use (7 studies, N = 1,212, r = -.05), although showing that offenders appeared to have slightly less exposure to pornography, was not judged to be reliable. Further, in the five studies included, although criminals tended to be exposed to pornography at a slightly earlier age, this effect wasn't considered reliable (r = .03, N = 903).

Interestingly, a relatively strong effect was found when considering the average effect across the seven studies in which sexual activity after viewing pornography was examined (r = .23). After viewing pornography, criminals were more likely than noncriminals to perform a sexual act, such as masturbation, consensual, or criminal sex.

Finally, after analyzing the degree of physiological sexual arousal, across 32 studies, Allen, Emmers, et al. (1995) concluded that in general

sexual criminals were more aroused than noncriminals (r = .15, N = 2,099). However, in studies in which portrayals of consenting and nonconsenting sex were separated, it was found that in comparison to noncriminals, sex criminals were more aroused by violent sex (r = .39). By contrast, the difference was in the opposite direction with consenting sexual portrayals (r = -.26).

It should be noted that although criminals may be less aroused sexually by consenting depictions than noncriminals, the data on "sexual acting out" suggest that they may still be more likely than noncriminals to engage in some sexual activity following either type of pornography exposure. This conclusion appears warranted because no moderator effect on the dependent measure of pornography use as a prelude to sexual activity was found. Yet it cannot be ascertained from the description Allen and his associates give of these studies if any opportunity actually existed in the literature available to them for systematic examination of possible moderator effects.

Correlational studies with noncriminals. There have also been a few studies in which the potential relationship, in naturalistic settings, between use of pornography and self-reported sexual aggression was examined. (See the discussion of validity of such reports later in this review.) Before turning to describe two such studies, we would like to briefly mention one relevant study that does not enable differentiation between criminals and noncriminals and was not included in any of the meta-analyses described earlier. In a doctoral dissertation Frank (1990) obtained reports from a sample of 303 college students and 286 prison males of a similar age about their sexually aggressive behavior. Analyses were conducted on the total sample of 589 participants to examine associations between pornography use and sexual aggression. Sexual aggression was measured by a 29-item self-report index. Pornography use was measured by asking participants how frequently they had bought or read any of several pornographic magazines in the past year and by asking them to indicate how often they used or looked at similar magazines when they were growing up.

Analyses are presented as part of odds-ratio analyses (a measure of relative risk), rather than correlations. Results showed what was labeled a significant but modest association between sexual aggression and pornography use. This result was primarily due to those indicating "heavy current use of pornography." Such use had an odds ratio of 2.79, which means that these subjects were nearly three times more likely than the sample as a whole to be sexually aggressive. This investigator also investigated 50 "risk factors" that have been found to correlate with sexual aggression. The investigator rank-ordered them in terms of their magnitude of association with sexual aggression. He found that current use of sexually explicit magazines ranked very close to the middle of all risk factors (26th).

We were only able to find two studies (Boeringer, 1994; Crossman, 1995) in which the association between noncriminals' pornography use and sexual aggression in naturalistic settings was investigated. In both studies a significant association between sexual aggression levels and use of at least certain forms of pornography was found. Because we find Boeringer's study particularly helpful in our efforts to review the literature, we will discuss it in some detail and only briefly first summarize the findings of the other study.

In a sample of 488 college men, Crossman (1995) investigated the possible association between various degrees of sexual aggression and individual differences variables (i.e., impulsivity, hostility, psychopathology, peer pressure, and pornography use). Sexual aggression was measured by the Koss and Oros (1982) well-validated scale of self-reported sexual aggression. Pornography use was measured by a 17-item scale measuring use of different types of pornography. She found that pornography use was the strongest correlate of sexual aggression among all of the variables studied. Pornography use alone accounted for 12% of the total variance in sexual aggression. She reports that the more frequently men used pornography and the more violent the pornography they used, the more likely they were to be involved in various types of coercive sex, including physical coercion (i.e., rape). Pornography use as a predictor remained significant after controlling for the impact of the other variables.

Boeringer (1994) administered questionnaires to 477 undergraduate males. He assessed four measures of exposure to different types of sexual materials: (a) exposure to soft-core pornography—a scale variable of two questions measuring the degree of respondent's exposure to magazines such as *Playboy, Penthouse* and *Hustler*; (b) exposure to hard-core pornography—assessing the degree of respondent's exposure to hard-core pornographic depictions, in which graphic sex acts are shown or described, and exposure to similar videos/movies/magazines, and/or paperback books; (c) violent pornography—consisting only of sadomasochistic portrayals of bondage, whipping, and spanking but (without an explicit lack of consent) in video, magazines, or paperback formats; (d) rape pornography—sexually explicit rape depictions in which force is used (with explicit lack of consent) in video, magazine, or paperback. Because this will be relevant to the discussion that follows, it should be noted that all intercorrelations among these usage measures were at or well above .40 (p <.001), except for soft-core porn and rape porn, which correlated .26 (p <.001).

The measures of sexual aggression included reports of different types

of coercive sexuality, including those meeting the legal definition of rape, or attempted rape, verbal coercion, and the use of drugs or alcohol as a coercive tactic. Boeringer found that all of the pornography measures correlated significantly and quite strongly with the use of verbal coercion (ranging from between .28 to .34) and the use of drugs/alcohol (ranging from .17 for soft-core pornography to .31 for violent pornography). All the measures of pornography use, except for soft-core porn, also correlated significantly with rape (ranging from .27 for hard-core pornography to .39 for violent and for rape pornography). Boeringer (1994) also conducted a series of additional analyses, which showed, for example, that the "group reporting higher exposure to violent pornography was almost six times more likely to report rape behavior than the low-exposure group (13.8% vs. 2.4%)" (p. 297).

The results of a regression analysis conducted by this investigator, highlighted in both the abstract and the discussion, should also be carefully considered. On the one hand, it may appear to help sort out the relationship between different types of pornography use and aggressive behavior and may appear consistent with the laboratory data showing opposite effects for nudity portrayals versus other types of pornography. On the other hand, some readers may find the complexity of the relationships between different types of pornography and different dependent measures, even within the same study, to support Fisher and Grenier's (1994) assertion that findings are not consistent.

It is worthwhile to begin by focusing on Boeringer's (1994) description of the results in his abstract:

> Multivariate analysis indicated that the strongest correlates of sexual coercion and aggression, as well as rape proclivity were exposure to hard-core violent and rape pornography. Exposure to soft-core pornography was positively associated with likelihood of sexual force and nonviolent coercive behavior, but negatively associated with likelihood of rape and actual rape behavior. (p. 289)

Let us consider the basis for this summary statement by focusing on the regression analysis conducted by this investigator. The various types of exposure (soft-core, pornography, violent porn, and rape porn) were also regressed on each of the dependent variables. Here it was found that on verbal coercion, exposure to men's magazines and violent pornography were significant predictors, explaining 13% of the variance. On the variable measuring use of drugs or alcohol to obtain unwanted sex, only exposure to rape pornography was predictive (8%). On the variable of rape, Boeringer reported that exposure to men's magazines was actually negatively related, whereas violent pornography and rape pornography were positively related. In summarizing these data in the text of the study, the investigator reported that "exposure to milder materials found in soft-core pornography is positively related to engaging in coercive verbal behavior and hypothetical likelihood of using sexual force, but negatively related to actual use of physical force in sex and likelihood of rape" (p. 299).

We believe that there may be an unintended misleading impression created in the latter part of the conclusion presented. In simple correlations, soft-core pornography use was not significantly related to the use of physical force (rape) (r = .01) and was positively related to self-reported likelihood of raping. (Data regarding this variable in other studies are described later in this review.) Only in the regression analyses did the direction of the relationships reverse and become significant. As already noted, the predictor variables of different types of pornography use were highly intercorrelated. We believe that the results of the regression analyses may be the result of a "suppressor effect." Cohen and Cohen (1983) described and provided examples of several varieties of suppression relationship and how to identify the existence of one. The pattern in this study by Boeringer (1994) for the rape likelihood and the rape behavior measures fits such criteria very well (i.e., a significant beta in the regression analysis that differs in magnitude or direction from the initial correlation). Essentially, a suppressor relationship occurs when a predictor variable adds to the prediction of the dependent variable in a regression analyses by virtue of its correlation with the other independent variables. It is called a suppressor variable because there is some overlap between it and the other predictor variable, but it "suppresses" variance of the other predictor that is irrelevant to prediction of the dependent variable.

It can be concluded with confidence, therefore, that the use of violent and rape pornography was positively correlated with various types of sexually coercive behavior. It would be inappropriate to conclude, though, that exposure to soft-core pornography was negatively associated with either likelihood of rape or actual rape behavior. One can only determine from the study that when placed in a "combination set" within the regression equation, soft-core pornography shows a negative association. A complete interpretation of the basis for these effects would benefit from further statistical probing. Regrettably this was not pursued in Boeringer's study.

Pornography Use and Attraction to Sexual Aggression

Although not the primary focus here, it may be added that in several studies, there have been analyses of associations between pornography use and self-reported likelihood of committing sexually aggressive acts (if one were assured of not being punished), such as forcing a woman to

engage in sexual acts, forced rape, or sexual harassment. This type of measure was originally developed by Malamuth (1981) and later expanded by Malamuth (1989a, 1989b). Malamuth has consistently emphasized that this is a measure of attraction to sexual aggression and not a substitute for measuring actual aggression. In their review, Fisher and Grenier (1994) do not make this distinction sufficiently clear. It is worthwhile, though, to briefly summarize the findings from studies in which pornography use in naturalistic settings has been looked at in relation to these attraction measures.

Boeringer (1994) found the reported likelihood of forcing a woman sexually (LF) correlated significantly with the use of hard-core pornography (r = .27), violent pornography (.40) and rape pornography (.39), but it was not correlated with the use of soft-core pornography (r = .07). Reported likelihood of raping (LR) was significantly correlated with all types of pornography use (ranging for .22 with soft-core to .40 for violent porn). Demare, Briere, and Lips (1988) found that although exposure to nonviolent pornography and violent pornography correlated with reported likelihood of sexual aggression (measured by LF and LR), discriminant function analysis showed that this relationship was primarily due to the use of sexually violent pornography (note: their presentation does not provide simple correlation statistics). Barak et al. (1999) recently found that pornography exposure, which was measured by exposure to various types of sexually explicit materials in differing media, was significantly correlated with a measure of reported Likelihood of Sexually Harassing (r = .42). Crossman (1994) reported that LR was significantly correlated with a relatively comprehensive assessment of the use of various types of pornography (r = .28). Check and Guloin (1989) reported that "there were significant differences between high-frequency pornography consumers and low-frequency consumers on . . . reported likelihood of rape (p < .0005), reported likelihood of forcing a woman into unwanted sex acts (p < .020)" (p. 175). There appears, therefore, to be considerable consistency in studies showing a significant association between habitual pornography use in naturalistic settings and attraction to sexually aggressive/harassing behaviors.

Summary and Discussion of Overall Findings

The following is a summary of the findings of the various meta-analyses and other studies presented earlier: Meta-analyses of the experimental literature show that exposure to both nonviolent pornography and violent pornography affects both aggressive attitudes and behaviors, and that violent pornography does so to a greater degree. Exposure to nudity alone was systematically examined only in the experimental research on

aggression, and a significant decrease in aggression following such exposure was reported. The correlational data on attitudes do not reveal a similar effect as the experimental studies, but no analysis of the differences between nonviolent and violent pornography was possible here.

The meta-analysis of the correlational data on aggressive behavior focused on differences between rapists and nonrapists. This analysis showed no differences in age of first exposure or amount of exposure, but differences were evident in sexual arousal patterns and in the extent to which exposure to pornography led to some sexual act (masturbation, noncriminal, or criminal sex). Rapists were found to be more aroused by violent pornography than nonrapists and somewhat less aroused by consenting sex depictions. Both types of stimuli, however, were associated with greater likelihood of some form of sexual act by rapists. In addition, although there are only a very few studies in which the association between pornography use and degree of sexual aggression has been analyzed within the noncriminal population, such an association has consistently been found, particularly for violent pornography. Similarly, associations between pornography exposure, particularly violent pornography, and the reported likelihood of sexually aggressing, have also been consistently found.

Overall, then, there appears to be considerable consistency across the available literature. There is also some indication that the associations found between pornography use and sexual aggression may be due to differences at the more extreme ends of the distributions, both in terms of the content of the stimuli and the participants involved. In terms of content, there is much consistency for an association between exposure to violent pornography and aggressive responses. For nonviolent pornography, the effects are not as strong or consistent, but they also emerge quite reliably. Here, the differences may primarily be between those with relatively "heavy use" and others (e.g., see Frank, 1990). With this possibility in mind, we turn to the next major section of this article. Informed by the extensive review, we systematically examined a largely neglected aspect of the research literature, the possible association within the noncriminal population between pornography use and sexual aggression in naturalistic settings.

THE PRESENT RESEARCH

Importance of Effects

Clearly, no influence on human thinking or behavior works in a vacuum, and the influences of media combine and interact with a variety of other individual and cultural factors—sometimes counteracting them, sometimes reinforcing them, and at other times not having much

of any effect. It is important to keep in perspective the nature of the effects and associations that have been found for the research discussed. These have not been the wide-sweeping changes that some seem to assume are being suggested (e.g., Fisher & Barak, 1991). It would be unparalleled in media research if they were. Given the type and duration of exposures involved and the fact that the subjects are adults with relatively established attitudes and behaviors, the most that can be expected (if effects exist) in experimental studies is that such effects would be detected only with very careful and precise assessment that is specifically geared to the manipulations used. In the correlational research, it is also important to keep in mind that only relatively modest associations would typically be expected between a single variable, such as media exposure, and a complex set of attitudes and/or behaviors that are undoubtedly related to the interactions among many factors. Rosenthal (1986) has persuasively illustrated the social consequences of "small effects" typically found in research on media and antisocial behavior. He showed that although proportions of variance accounted for may appear low, the practical consequences can be very substantial.

On the basis of the research available, it is not feasible to gauge the relative importance of media influence generally, and of pornography specifically, in comparison to other factors. It is unlikely that in and of itself any type of pornography exerts a powerful effect on large numbers of people, but as concluded in the consensus statement of the social scientists participating in the Surgeon General's Workshop, "Pornography does have effects; it is just not yet known how widespread or powerful they really are" (p. 19, Mulvey & Haugaard, 1986). As discussed subsequently, it may be that the effects of pornography are important for some individuals but not for others and that they may be relatively powerful only as they interact with some other factors.

Individual Differences and Synergistic Effects

In fact, one of the problems in the literature has been the use of oversimplistic models, including the lack of sufficient consideration of the role of individual and cultural differences as moderators of media influences. In addition, researchers have largely attempted to consider the role of media stimuli in isolation from other variables, often not giving sufficient consideration to the role of the media in complex interactions with other influences. As suggested by Malamuth and Billings (1986) and documented in the Allen et al.'s (2000) meta-analysis comparing rapists and nonrapists (see previous section of this article), focusing only on quantity of exposure may be an oversimplified approach. Sexually explicit media's degree of influence on a person may largely depend on how that exposure interacts with other influences.

Individual Differences as a Key Moderator

Researchers in this area have repeatedly suggested that effects are not necessarily the same upon all individuals and in all environments (Malamuth & Briere, 1986). Therefore, when analyzing the influences which sexually explicit stimuli have upon a person, moderating factors must be taken into consideration that may justify very differing conclusions for various people. Based on research to date, we believe that important moderators include the cultural background milieu of the person (e.g., a culture that emphasizes or de-emphasizes equality between the genders), the individual's home background (e.g., open or highly restricted education about sexuality), individual's relatively stable personality characteristics and predispositions (e.g., dispositionally hostile or not, intelligence level), the particular content of the stimuli (e.g., sexually violent or not), the current temporary emotional state of the person (angered or not), and the environment in which exposure occurs (e.g., permissive vs. nonpermissive for aggression). Particularly relevant to the current research, there is increasing evidence from various experimental studies that the moderator variable of men's stable personality characteristics and predispositions is especially important: Those scoring relatively high in pretest measures of risk characteristics (e.g., self-reported attraction to sexual aggression, hostile masculinity and/or low intelligence) have shown the most pronounced negative effects of exposure to certain sexually explicit materials, particularly those that combine sex and violence (e.g., Bogaert, 1993; Bogaert, Woodard, & Hafer, 1999; Malamuth & Check, 1983, 1985). Indeed, in much of this type of this research, it is only these type of men who show evidence of significant negative effects. A variety of dependent measures have been used in studies showing such moderating effects of individual predispositions, including fantasies (e.g., Malamuth, 1981; Malamuth & McIlwraith, 1989), beliefs in rape myths (e.g., Malamuth & Check, 1985), sexual arousal (e.g., Allen et al., 2000; Malamuth & Check, 1981) sexually suggestive behavior toward a female confederate (Bogaert et al., 1999; McKenzie-Mohr & Zanna, 1990) and laboratory aggression (Donnerstein & Berkowitz, 1981; Malamuth, 1983).

The results of these studies also suggest a bidirectional relationship: Men who are relatively high in risk for sexual aggression are more likely to be attracted to and aroused by sexually violent media (e.g., Malamuth & Check, 1983) and may be more likely to be influenced by them (e.g., Malamuth & Check, 1985). This work dovetails well with the

emphasis in social learning theory on the concept of *reciprocal determinism*, defined as "a continuous reciprocal interaction between personal, behavior and environmental determinants" (Bandura, 1977, p. 194). This concept encompasses bidirectional influences, whereby individuals' characteristics (e.g., gender, personality, etc.) may affect selecting or attending to certain content in the media and the extent to which such experiences are pleasurable or otherwise reinforcing.

Although we believe that each of the methodologies brought to bear on this topic has certain advantages and disadvantages, reviewers skeptical of the validity of findings in this area have been particularly dismissive of the value of laboratory research (e.g., Lab, 1987). For example, Fisher and Barak (1991) summarized their own conclusions and those of various other writers representing this point of view when they concluded the following: "Hence, the poor analogues provided by laboratory research may tell us little or nothing about the relation of pornography and aggression in the real world. . . .While ecological validity may be irrelevant to the detection of theoretically interesting relationships, it is critical to the construction of research which seeks to model the naturally occurring consequences of exposure to pornography" (p. 77).

Importantly, the present research addresses this issue by modeling the relationship between pornography consumption and aggression in naturalistic settings. We will, nonetheless, have the opportunity of examining the degree of similarity between our conclusions with that from other methodologies. In particular, we will investigate in "real world" settings the role of the variable that to date has been found in experimental research (primarily conducted in laboratory settings) to most consistently moderate the effects of exposure to pornographic stimuli: Individual differences among men at risk for sexual aggression (see references previously listed). The advantages and disadvantages of our methodology complement those of laboratory studies. Thus, the degree to which our findings are similar to those of laboratory studies will affect considerably the confidence we can have in the generalizability of the findings emerging from these distinct methodologies.

Two more key issues have been emphasized by critics of laboratory research (e.g., Fisher & Barak, 1991; Kutchinsky, 1991). These concern the "unrepresentativeness" of stimuli and of subjects. First, these critics have noted that sexually violent depictions, which have been used in a substantial number of the laboratory studies documenting negative effects, constitute a small percentage of the pornography market. Second, while acknowledging that reliance on university students may actually "result in serious underestimation of pornography-induced harm" (Fisher & Barak, 1991, p. 78), these writers have noted that the reliance on volunteers rather than representative samples may seriously skew the conclusions in the direction of accentuating any effects. In the research described herein, we have addressed all three of these objections by (a) using a representative national sample of men (who achieved any form of post-high school education), (b) operationally defining pornography as the use of the most common form of sexually explicit media (i.e., magazines), and (c) studying aggressive behavior in naturalistic settings.

Correlational Studies

The type of methodology used in the present research is similar in some respects to the few earlier correlational studies examining whether those individuals who consume more pornography have more sexually aggressive tendencies and/or behaviors. However, in the previous studies, researchers relied on convenience samples of volunteers who are not representative of any larger population. Those researchers also did not control for other key risk factors associated with sexual aggression. Moreover, previous researchers have often failed to properly examine the role of key moderator variables that may reveal different relationships within certain subgroups in the samples. The current research substantially improves upon previously published studies by overcoming these limitations: We not only use a representative sample but include critical control variables, and we specifically examine potential interaction or moderator effects.

Competing Views

Three views may be described that helped guide the analyses reported.

Model I: Pornography as a Form of Sexual Communication

Proponents of what has been labeled by Malamuth and Billings (1986) as the *Sexual Communication* approach contend that pornography is essentially communication relating to sexuality. According to this position, consumers are attracted to pornography because they desire to fulfill their sexual curiosities and needs. This interest in pornography has no connection to coercive behavior against women. This view is most often associated with the conclusions of the 1970 Presidential Committee on Pornography but also continues to be held by various researchers (e.g., Abramson & Pinkerton, 1995). This position explains any associations that might be found between interest in sexually explicit media and coercive behavior as due to confounding with other variables. For example, men who are more sexually promiscuous might

be more likely to be attracted to sexual media, and some of these men may also be more likely to engage in coercive sexual acts. According to this reasoning, research in which controls are used to eliminate such confounding should result in the disappearance of a spurious correlation between pornography consumption and aggression.

Model II: Pornography as a Contributing Cause to Aggression Against Women

The second model, which includes two somewhat different versions, is that pornography consumption can be a contributing cause of aggression against women. Russell (1988, 1998) has argued for a "direct effects" model, emphasizing a powerful direct connection between exposure to pornography and aggression against women. A somewhat different perspective is suggested by the "indirect-effects" model of Malamuth and Briere (1986). It considers the mass media as one among the many social forces that may, in interaction with other individual factors, influence the development of attitudes that condone sexual aggression. The combination of these attitudes with other risk factors may in turn sometimes contribute to antisocial behaviors against women.

Model III: Aggressiveness as a Cause of Interest in Pornography

A third view is that pornography use is a consequence or a reflection of aggressive tendencies toward women, not a cause of such aggression. There are at least two potential interrelated processes that may be proposed here. The first suggests that men who are hostile and, therefore, aggressive toward women are attracted to the kinds of images that portray and reinforce their already held hostile attitudes and behaviors. This view suggests that the aggressive tendencies directly lead to attraction to the kinds of images found in some pornography that portray women as available, vulnerable, and controlled. A second explanation proposes that men who act coercively toward women often have difficulties in their sexual interactions with women and are, therefore, attracted to fantasized depictions of sex. They have difficulty in maintaining relationships with women, due to such underlying factors as lack of social skills, strong desire to control, and social isolation from women. Their lack of success with women has made them more likely to seek sexual gratification in other ways than in long-term sexual relations with women, and they are, therefore, more likely to regularly use pornography.

In the research described herein, we do not seek to definitively pit the predictions of Models II and III (pornography as a cause or as a symptom) against each other, as cross-sectional correlational data can-

not fully disentangle cause and effect relationships, no matter how many statistical controls are applied. Therefore, our analyses are primarily directed at examining whether pornography consumption may be considered a risk factor (or a marker) for sexual aggression, after controlling for other key factors. We emphasize that the analyses cannot determine a cause-and-effect basis for the association observed in a way comparable to studies using random assignment. However, our findings need to be considered in the larger context of other research in this area that has employed differing methodologies. Each methodology has clear strengths and shortcomings, and therefore a multimethod strategy using complementary methodologies that balance each others' strengths and weakness may be illuminating. Moreover, as Ketelaar and Ellis (2000) aptly noted, scientific research seldom fits a "Popperian" approach whereby a single critical study can either terminally falsify or confirm a particular model. Thus, we favor a "Lakatosian" approach wherein the cumulative weight of evidence pertaining to differing models leads to progress. After presenting the results from a series of analyses conducted here, we hope to show how these findings may be embraced within a more comprehensive framework that provides a basis for an integration of a much wider sphere of pornography related research reviewed in the previous section of this chapter.

Method

Overview of Current Research

In order to present a cogent discussion of the data described in this article, first it is necessary to describe theoretical and empirical underpinnings of our larger research program focusing on aggression against women. In the current research, we present a series of analyses using a data base that had earlier been used to identify the major predictors of men's sexual aggression against women. Using structural equation modeling, Malamuth, Sockloskie, Koss, and Tanaka (1991) integrated the key factors of individual differences among men in the general population that have been identified in the research literature as predictors of sexual aggression against women. These individual-differences variables included both life history (i.e., developmental) and current personality characteristics of men. Data were gathered from a nation-wide representative sample of about 3,000 males enrolled in any form of post-high school education (e.g., trade schools, colleges, universities, etc.). The data consisted of subjects' responses to self-report measures and recollections of earlier experiences.

Malamuth et al. (1991) showed that coming from a home with parental violence and/or child abuse was associated with a higher rate

of delinquency in adolescence, which in turn was strongly predictive of greater sexual promiscuity (i.e., a short-term mating strategy). This path was labeled the Sexual Promiscuity (SP) path and predicted Coercion Against Women, as did the other major constellation, the Hostile Masculinity (HM) path. Together, these two paths accounted for 78% of the latent variance of Coercion Against Women, which was indicated by scales measuring sexual and nonsexual aggression against women. It should be noted that only two constructs—HM and SP—directly contributed to the construct labeled Coercion Against Women. The other factors in the model predicted Coercion Against Women indirectly, via their prediction of the two more proximate predictors of HM and SP. In subsequent follow-up analyses of sexual and nonsexual aggression separately, Malamuth et al. found that sexual aggression was best predicted by relatively high scores on both HM and SP, whereas nonsexual aggression was found to relate primarily to the HM dimension.

The model developed by Malamuth et al. (1991) labeled, the Confluence Model of sexual aggression, has been used as an organizing framework for the research to be described here, and we suggest that it can be similarly useful for addressing other questions in related areas. The analogy of a jigsaw puzzle may apply. Once certain key pieces have been identified, it is much easier to find the "right" positioning of the others. In a similar vein, we suggest that the two major constellations of characteristics of sexually aggressive men identified in this model provide the key pieces that can help position the role of other factors.

The Confluence Model may be best described as a "cumulative-conditional-probability" model. Belsky, Steinberg, and Draper (1991) provided an apt description of this type of a model

> when antecedent conditions A, B, and C obtain, the probability of D is greater than when only two of these antecedent conditions obtain, and that the probability of D is even less when just a single such condition obtains. Thus, whereas a path-oriented theory predicts than an effect will obtain only when the immediately preceding influential condition exists, a conditional theory presumes multiple paths to an outcome and greater and lesser probabilities of an outcome ensuing given varying antecedent conditions. (p. 651)

In other words, such a model may suggest two interrelated aspects: (a) The likelihood that a certain factor will occur is affected by the presence versus absence of certain antecedent factors; (b) When a combination of certain antecedent factors in a sequence exists, the probability of a particular outcome is greater than when only some of these exist. We further suggest that although each antecedent factor independently contributes to a higher probability of the outcome, the combination of certain factors has more than a simple additive effect on the likelihood of the outcome (e.g., a "synergistic" effect).

Our approach also has some similarity to some other theorizing, such as that of Sternberg and Lubart (1999) regarding creativity. These theorists have noted the utility of a multivariate approach in predicting creative performance. Their model includes intellectual processes, knowledge, intellectual style, personality, motivation, and environmental context as converging factors. Creative performance results from a confluence of these elements. Similarly, we maintain that sexual aggression is the result of the interactive rather than simply the additive combination of the two constellations of HM and SP.

In a recent meta-analytic review of studies focusing on attitudes toward rape, Anderson, Cooper, and Okamura (1997) reported results that supported a number of elements of the Confluence Model, particularly the relationship between such attitudes and sexually aggressive behavior, as well as the independence of the SP and HM constellations. In some of our later work (see Dean & Malamuth, 1996; Malamuth, 1998b) a third constellation was added to the other two "risk" constellations as a "protective" or countervailing one that can serve to reduce the risk of sexual aggression. In the current work reported herein, we do not include this constellation.

Various successful replications and extensions of the Confluence Model have been reported both with American samples (e.g., Anderson, 1997; Christopher, Owens, & Stecker, 1993; Wheeler, George, & Dahl, 1999) and in Singapore (e.g., Lim & Howard, 1998). It has recently been described as "the model that currently has the most empirical support." (Zurbriggen, 2000, p. 559).

Sampling Procedures

The sample used for the present research is described in detail in Koss, Gidycz, and Wisniewski (1987). An attempt was made to survey a representative sample of the U.S. college population. Because topics such as rape are controversial, some schools and individuals targeted by a systematic sampling plan refused to participate. Therefore, no design could be expected to result in a purely random sample. However, the present sample is probably the closest approximation to a random sample of the college population that can be obtained within the constraints imposed by the topic's sensitivity.

Using enrollment data provided by the Department of Education, schools were randomly selected to participate. If a school did not agree, a replacement was obtained using previously matched homogeneous clusters. Of the institutions in the final sample, 19 were first choices

and 13 were replacements. Within schools, a random selection was made of classes, with appropriate alternates in instances when those classes could not be used. Participants completed anonymous questionnaires. Fewer than 2% chose not to participate.

About 4 out of 10 Americans of college age attend college (U.S. Bureau of Statistics, 1990). Therefore, the current sample appears to have considerable generalizability to a large proportion of the general population that is of the age of particular interest. However, some caution may be needed in generalizing from the present sample to men identified by the judicial system, since the latter group might have engaged in more extreme and brutal acts and/or be more likely to have aggressed against strangers rather than acquaintances or intimates.

Participants

The original sample consisted of 2,972 men with a mean age of 21. Eighty-six percent were White, 6% Black, 3% Hispanic, 4% Asian, and 1% Native American. Koss et al. (1987) presented a detailed analysis showing that this sample is representative of the college population. Here we included only heterosexuals or bisexuals, and we eliminated those with missing data on the dependent measures. For those missing data on some independent variables, they were replaced by the mean score for the entire sample, a conservative procedure that typically reduces rather than accentuates group differences.

For analyses that included the nonsexual aggression measure, the sample size ranged from 1,713 to 1,760 men. The major reason for about 30% of the sample not completing the nonsexual aggression measure seems to relate to its appearance on the last page of the questionnaire. In contrast, the sexual aggression measure appeared near the middle. Although the questionnaire had been pretested for a "typical" class session, at some schools the time available to respondents was shorter than in others. As well, some questions, such as those concerning sexual aggression, used a "funnel" format so that those indicating having engaged in certain behaviors provided more information about them. Consequently, they needed more time. This may have resulted in difficulty in completing the questionnaire within the time allotted at some schools. Evidence supporting this reasoning showed that subjects not completing the entire questionnaire had significantly higher scores on measures such as sexual aggression than those completing it.

Measures

We provide here summary information regarding some of the key measures used in the present analyses. Detailed information on all of the other measures may be found in Malamuth et al. (1991).

Assessing Pornography Use

In the present study, we operationally defined the pornography variable on the basis of degree of exposure to sexually explicit magazines. Sexually explicit stimuli taken from such magazines have been used often in laboratory studies focusing on the effects of pornography on aggression against women (e.g., Donnerstein et al., 1975; Malamuth, 1981), and they are very widely distributed (Attorney General's Commission on Pornography, 1986). Correlations, if any, found between consumption of these types of stimuli and individual differences in aggressive behavior are not easily attributable to some atypical or "fringe" materials uniquely consumed by a small percentage of the population.

Participants were asked to respond to the following question, which inquired about their usage of the leading men-oriented sexually explicit magazines: "How often do you read any of the following magazines: *Playboy, Penthouse, Chic, Club, Forum, Gallery, Genesis, Oui, or Hustler* (Check one)." This question was followed by a 4-point scale: *Never* (1), *Seldom* (2), *Somewhat frequently* (3), *Very frequently* (4).

There are a number of limitations in this assessment. One of these was the use of only a single item to measure the use of sexually explicit magazines. Further, we asked subjects to indicate their perceived frequency of exposure rather than providing information on a more "objective" scale (e.g., how many times a week, for how long, etc.). On the other hand, including a multi-item assessment of pornography use might have made subjects more self-conscious about this particular focus and would have reduced the feasibility of assessing the various other relevant risk factors with the limited time available in this national survey.

Coercion Against Women

Sexual aggression. The Koss and Oros (1982) 10-item scale was used to assess sexual aggression (alpha = .70). Koss and Gidycz (1985) presented data regarding its reliability and validity. Although most researchers have only asked subjects to indicate whether they had ever committed any of the various coercive acts described (e.g., using a position of power over a woman to get her to engage in unwanted oral sex, holding a woman down and causing here pain in an attempt to get her to engage in unwanted intercourse, etc.), here they also indicated the frequency of such behavior since the age of 14, as well as within the last school year. We used the former frequency data but the results are very similar if the latter frequencies are used instead. Each of the 10 items

comprising this scale were coded 1 if the subject never committed the act, 2 if only once since the age of 14, 3 if twice, etc., up to a maximum of 6 if five or more times since age 14. The inclusion of frequency information made the assessment of sexual and nonsexual aggression similar, as both included a frequency component.

Only 16% of rapes are reported to police (Kilpatrick, Edmunds, & Seymour, 1991). Of those reported, only about half result in filing charges (McCahill, Meyer, & Fischman, 1979; also see Frazier & Haney, 1996; Horney & Spohn, 1991). Decisions about charges are affected in part by the offender's race and socioeconomic status (Frazier & Haney, 1996; Frohmann, 1991, 1997, 1998). The conviction rate for simple rape ranges from 9-25% in Philadelphia and Washington, D.C. (Weninger, 1978; Williams, 1981). The jury leniency for simple rape (acts among acquaintances when force was limited to that necessary to complete intercourse against consent) is tied for the highest of any crime and is much higher than any other crime against the person of equivalent severity (Bryden & Lengnick, 1997). These sources of evidence suggest that incarcerated samples represent only a fraction of those who commit rape and are biased toward persons of minority and lower socioeconomic status. Therefore, obtaining data from a random sample within the general population provides another important source of information about such acts.

Questions may be raised about the validity of self-reported sexual and other behaviors. The accuracy and truthfulness of self-reports on the Sexual Experiences Survey (SES) measuring sexual aggression have been investigated (Koss & Gidycz, 1985). The Pearson correlation between a man's level of aggression as described on self-report and as given in the presence of an interviewer was .61 ($p < .001$) (Koss et al., 1987).

Nonsexual aggression. The 10-item Conflict Tactics Scale measured both verbal and physical aggression (alpha = .87) by including behaviors such as arguing heatedly, yelling and/or insulting, pushing, hitting the other person, and hitting with something hard. (We used the original version of the scale, which did not include items such as using guns, because with the type of population studied here such behaviors are very seldom reported.)

Using 5-point scales ranging from *never* to *more than once a month,* subjects indicated the frequency with which they engaged in such behaviors against a female during the last school year in the context of conflict or disagreement.

Sexual Promiscuity

Two items, age of first sexual intercourse and the number of sexual intercourse partners since the age of 14, measured the latent variable labeled SP. The first was a 10-level item ranging from *before the age of 15* to *22 or never*. If a person was below the age of 22 and reported not having engaged in intercourse, the respondent's current age was coded for this item. The number of sexual intercourse partners since age 14 was assessed using an 8-point scale ranging from *none* to *over 50 people*. These two variables have been used frequently to assess sexual "acting out" (Elliott & Morse, 1989) and are key dimensions used by some evolutionary psychologists to define an "r" strategy (relatively high quantity rather than quality investment) of reproduction (Ellis, 1991). Newcomb and Bentler (1988) found that early sexual promiscuity was a strong predictor of a life-style pattern characterized by more promiscuous and more frequent sexual behavior. Others have suggested that early sexual promiscuity often is associated with and seems to temporally follow general deviance and problem behaviors (Elliott & Morse, 1989).

Hostile Masculinity

Two scales were the indicators of an HM latent factor. The first, Negative Masculinity, was included as a personality measure associated with coercion in general. It was developed by Spence, Helmreich, and Holahan (1979) and consists of eight items (alpha = .79). Subjects indicated on 5-point scales ranging from *not at all like me* to *very much like me* whether brief statements applied to them (e.g., "I am a bossy person." "Most people are out for themselves. I don't trust them very much.")

The second, Hostility Toward Women, was assessed by the 30-item Hostility Toward Women (HTW) scale (alpha = .80) (Check, 1985; Check, Malamuth, Elias, & Barton, 1985). Reliability and validity data were presented by Check (1985). Subjects indicated whether the statements were true or false. Examples are "I feel upset even by slight criticism by a woman," and "I rarely become suspicious with women who are more friendly than I anticipate."

Results

We used several statistical techniques. First, we used a series of structural equation models (SEM) in following-up the previous work of Malamuth et al. (1991), but here we added Pornography Use to the set of variables examined by Malamuth et al. in their model of the characteristics of men who commit coercion against women. For the SEM analyses, the sample consisted of 1,713 men for whom all of the measures were available (e.g., both sexual and nonsexual aggression). Second, to utilize the full sample available for the sexual aggression measure only and to test interaction and related effects we employed regression analyses and conducted a series of follow-up analyses of variance. For these latter

analyses, we focused on the sexual aggression measure and thereby used the larger sample. Typically, it used 2,652 participants, but in some analyses the number was slightly higher due to replacement of missing data on the predictor variables. Whenever replacement was used, the conservative procedure of using the entire sample's mean was used.

Analyses Using Structural Equation Modeling

Technical Information About Evaluating Model Fit

Typically, there are two ways to evaluate the degree of fit of a model in SEM. The first involves the acceptance of the null hypothesis using the chi-square statistic. However, Bentler (1995) provided several circumstances when this statistic can result in misleading conclusions. One problem with this evaluative method is statistical power; large data sets will have high statistical power increasing the probability of detecting trivial differences.

Considering the size of the data sets being employed here, it was extremely unlikely that any of the models would be accepted according to the chi-square statistic alone. The other method of evaluating the fit of a model involves comparative fit indexes, which have become widely used in recent years. One index, the Normed Fit Index (NFI; Bentler & Bonett, 1980), ranges from zero to 1 and indicates the degree of fit of a hypothesized model compared to a baseline/null model. Bentler and Bonett recommended accepting NFIs of .90 or greater as indicative of a good fit. Although this index can be problematic in small samples (Maruyama, 1998), the sample size used here is more than adequate. The Comparative Fit Index (CFI; Bentler, 1995) is another index for evaluating model fit, but, unlike the descriptive nature of the NFI, this index was developed to measure the comparative reduction in noncentrality proposed as a population measure. Typically, models with a fit index above .90, without correlated error terms, are viewed as being acceptable in a statistical sense (Bentler, 1995). Because these indexes are not affected by statistical power per se, this will be the preferred method of evaluating the models tested in this paper.

To simplify presentation, in the SEM models shown herein, we only present the essential information to evaluate the model fit. We present pertinent information regarding the coefficients and their level of significance of relevant paths, model fit indices, and when relevant, the suggestions of the Lagrange Multiplier (LM) Test (modification index for adding parameters; Tabachnick & Fidell, 1996) that indicates whether certain parameters should be added to improve the fit of the model (see further discussion of the utility of this test later in this review). In addition, in the accompanying figures, we present the amount of variance accounted for in each construct, rather than following the convention of presenting the residual unaccounted variance (for the reader's ease).[1]

Initial Model Without Pornography Use

Presented in Figure 1 is the model published by Malamuth et al. (1991). As noted, the amount of variance accounted for is presented. As described in detail by these investigators, the overall fit of the model was very good. It was successfully replicated in two randomly split halves of the entire sample, and it accounted for a large percentage (78%) of the variance in the latent construct of Coercion Against Women (which included both sexual and nonsexual aggression against women).

Models Including Pornography Use

We began to explore the role of pornography by testing the hypothesis that exposure to sexually explicit media was associated with SP only (see Model I, the Sexual Communications Model). We conducted two analyses with the pornography variable added to Malamuth et al.'s (1991) model. In one case, a "causal" path was included from SP into Pornography Use, whereas in the second case the path was reversed in its "causal" direction. In both instances the paths were highly significant. We present a summary of the first of these models (see Figure 2), which shows a highly significant path from SP into Pornography Use (path coefficient beta = .28, $p < .001$).

The fit indices indicated good fit for the model generally (NFI = .93, CFI = .95). However, in the SEM analyses conducted here, we also relied on the LM Test to evaluate whether associations with Pornography Use were sufficiently accounted for. The LM test asks "which parameters, if any, should be added to a model" (Tabachnick & Fidell, 1996, p. 758). Although certain usages of modification indices designed for improving model fit are questionable, Maruyama (1998) has endorsed the type of strategy used here for evaluating whether variables "share additional sources of common variability beyond the specified factor structure" (p. 252). This modification index did reveal that there was a statistical association not yet adequately accounted for between Pornography Use and Coercion Against Women.

Models Assessing the Association Between Pornography Use and Coercion

Subsequent SEM analyses were designed to look at alternative mod-

[1]Further technical details about the models are available from the authors.

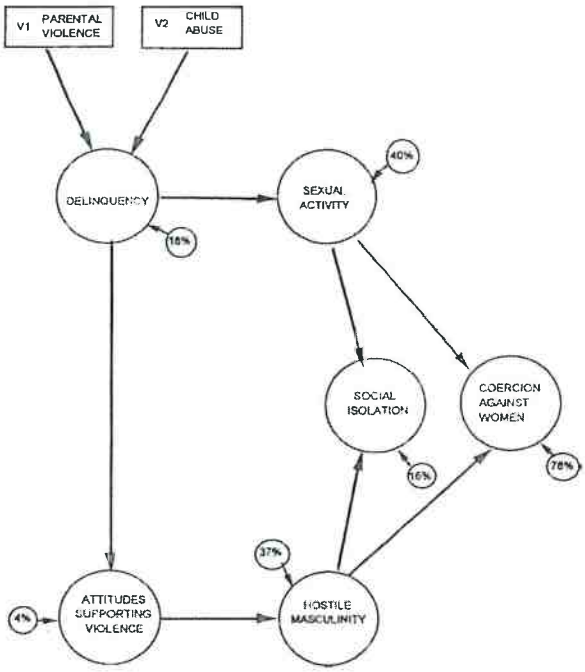

Figure 1. Modified version of the Confluence Model as published by Malamuth et al. (1991). Percentages indicate the amount of variance accounted for.

els that might account for this association between Pornography Use and Coercion Against Women. Two versions of the model that proposed that pornography has a contributing role to coercion against women were tested. One possibility is that there is a direct connection between these two constructs (see "direct causal" version of Model II). An alternative possibility is that there is an indirect path mediated by some of the other constructs assessed here. The test of these models is organized around several interrelated questions:

Is Pornography Use a direct and/or indirect contributor to coercion? Initially, we added to the model a "direct" path between Pornography Use and Coercion, which was statistically significant (beta = .09, $p < .01$).

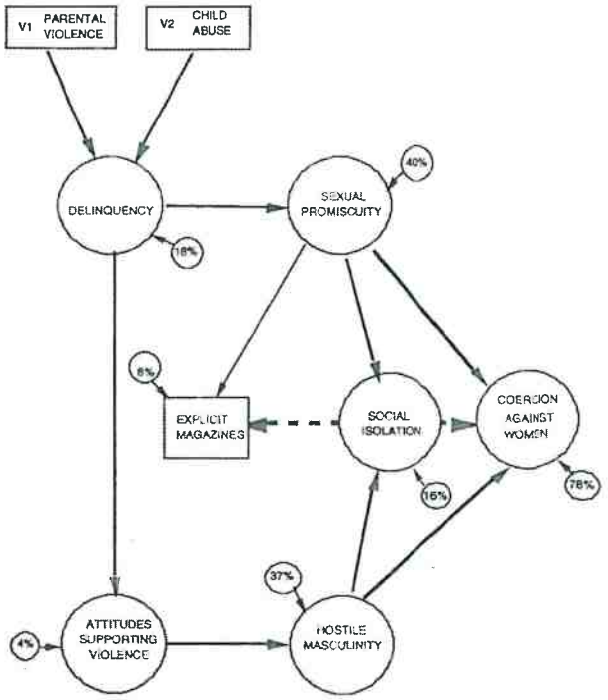

Figure 2. Addition of Pornography Use (sexually explicit magazines) to Confluence Model. The broken arrow indicates a statistical relationship not adequately accounted for by this version of the model.

However, the Lagrange Multiplier Test suggested that indirect paths should also be added to the model. Once the indirect paths were added, the direct path became nonsignificant and was eliminated. Although this might be interpreted to suggest that an "indirect model" may be the more appropriate, we do not believe that this statistical technique clearly justifies such a conclusion. It is not unusual with structural equation modeling that more than one model can be shown to fit the data equally well. The fit indices were similar for both models and the statistical "preference" for the indirect version needs to be treated with considerable caution here because it was not one specifically contrasting these two

versions of the model. Instead, it showed that if both direct and indirect paths are included, it is the indirect paths that are preferred. We therefore present the findings for the "indirect causal" model.

The model including indirect paths (see Figure 3) specified paths from Pornography Use into SP, Attitudes Supporting Violence Against Women, and HM. All three of these were significant: Pornography Use path to sexual activity yielded a beta of .26 ($p < .01$), the path to Attitudes yielded a beta of .11 ($p < .01$), and the path to HM yielded a beta of .11 ($p < .01$). The overall fit of the model was very good, χ^2 (107, N = 1,713) = 260, $p < .001$, NFI = .93, CFI = .96. The addition of the Pornography Use variable in the model increased the amount of variance accounted for in HM by 1% (from 37% to 38%) and similarly in Coercion Against Women by 1% from 78% to 79%. (The amount of variance accounted for in Attitudes Supporting Violence and in SP did not change because some of what was previously accounted for by other predictors was now "reassigned" to Pornography Use.) No other paths were suggested by the modification indices. Thus, in this model Pornography Use does indirectly affect Coercion Against Women via its impact on Attitudes Supporting Violence, SP, and HM. However, the overall increase in the amount of variance accounted for in each instance is modest. Some may perceive such an increase as of little importance but others may argue that even a 1% increased ability to predict coercive behavior in a large random sample of the population represents an important, policy-relevant gain.

Is Pornography Use a symptom of coercion? The next model tested was the Aggressiveness as a Cause of Interest in Pornography model (Model III), in which pornography is viewed as a symptom of Coercion rather than a cause. This possibility was tested by placing a path from Coercion into Pornography (see Figure 4). The overall fit of the model was very good, χ^2 (109, N = 1,713) = 249, NFI = .94, CFI =.96. This model's fit was very similar to that of the "indirect causal" model. The path from Coercion to Pornography yielded a beta of .33, $p < .001$ and, as shown in Figure 4, 11% of the variance of Pornography Use was accounted for in the model. No other paths were suggested by the modification indices.

The analyses conducted up to this point have indicated that (a) Pornography Use is related to Coercion Against Women, even after the expected association with SP has been accounted for, (b) the "direct causal" model, an "indirect causal" model, and a "symptom" model fit the data well, and there is no firm empirical basis for preferring one over the other. (Note that since these are not "nested models," statistical comparisons cannot be made between them.)

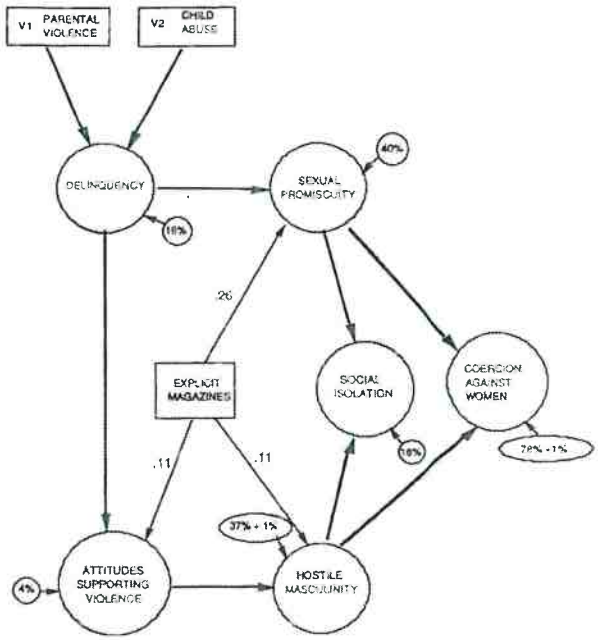

Figure 3. "Indirect causal" model with use of Sexually Explicit Magazines contributing to the prediction of Conflict With Women via its influence on Sexual Activity, Attitudes Supporting Violence, and Hostile Masculinity.

Regression Analyses

As noted earlier, in order to utilize the full sample available for the sexual aggression measure only and to test interaction and related effects, we used regression analyses and conducted a series of follow-up analyses of variance.

Main Effects

Regression analyses on the sexual aggression dependent measure were conducted by converting each of the constructs used in the SEM analyses into manifest variables. With the full sample (N = 2,652), we created standardized composite measures using the various components

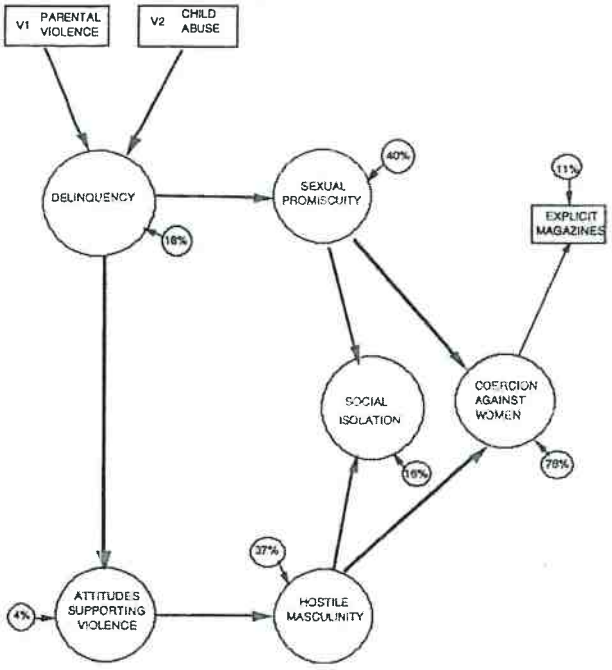

Figure 4. "Symptom" model whereby Coerciveness is a "cause" of greater consumption of sexually explicit magazines.

comprising the constructs studied (for details of the individual measures, see Malamuth et al., 1991). For example, for Abusive Family Background, the measures of nonsexual violence in the home and of sexual abuse were each converted to *z* scores and summed together to create a single composite score.

A hierarchical regression was used in which the five composite variables (Abusive Family Background, Delinquency, Attitudes, Promiscuity, and HM) were first entered into the regression analyses, yielding a Multiple R of .37, $F(5, 2646) = 84.3$, $p < .0001$. Then the Pornography variable was allowed to enter, and it did enter significantly ($p < .0001$), with the Multiple R now at .38, $F(6, 2645) = 74.5$, $p < .0001$. Presented in Table 4 is a summary of the relevant statistics with all of these variables in the equation. Each of the six independent variables, including Pornography, contributed uniquely and significantly to the dependent measures of sexual aggression. This reinforces the SEM analyses indicating that even with all of the other previously identified "risk" predictors included or controlled for, the Pornography variable adds significantly to the statistical prediction of individual differences in sexual aggression. Although the overall amount of variance accounted for by the addition of the Pornography variable (about 1%) may not be considered large, the additional information shown in Table 4 indicates that with all of the variables in the equation, Pornography Use is comparable to several of the other predictors in the magnitude of its contribution to the equation. Whether Pornography Use should be considered only as the "last contributor" and, therefore, evaluated exclusively by the added overall percentage of the variance accounted for or whether it is more appropriate to evaluate it as with any of the other risk factors by virtue of contribution to the overall equation (e.g., by its beta weight or semipartial correlation) depends on the investigator's theoretical perspective. In any case, it is a significant statistical contributor, but the degree of its contribution may be judged quite differently depending on whether it is "the last added" or simply one of several potential risk factors considered. Moreover, the interaction and particularly the follow-up analyses reported subsequently clarify considerably for whom pornography use is of relatively little importance in predicting levels of aggression and for whom it appears to be a very important factor.

Table 4
Results of Regression Analysis Predicting Sexual Aggression Levels, Using the Full Predictor Set of Malamuth et al. (1991) and the Addition of Consumption of Sexually Explicit Magazines (Pornography Use)

Predictors	B	SE B	BETA	t
Family Violence	0.19	0.04	0.09	5.0***
Delinquency	0.14	0.04	0.07	3.7**
Attitudes	0.18	0.01	0.05	2.8*
Promiscuity	0.59	0.05	0.23	12.3***
Hostile Masculinity	0.36	0.05	0.14	7.1***
Pornography	0.26	0.06	0.09	4.7***

*$p < .005$. **$p < .0002$. ***$p < .00005$.

Interaction Effects

Analyses were also conducted to test interaction effects with the Pornography variable. Following-up on the analyses reported by Malamuth et al. (1991), we focused on the two factors (SP and HM) shown to have direct effects on the dependent variable of sexual aggression. We first centered all of the variables (Cohen & Cohen, 1983) and entered the main effects for the Promiscuity, HM, and Pornography factors, each of which yielded a significant F Change score ($p < .0001$). We then added the two-way interaction between Promiscuity and HM, which had been found to be significant by Malamuth et al. (1991). It too yielded an F Change score which was significant ($p < .0001$). Finally we added to the equation the three-way interaction between Promiscuity, HM, and Pornography, which yielded an F Change that was significant ($p < .002$). Both the main effect and interaction results, therefore, indicated that the Pornography variable added to the prediction of sexual aggression beyond the factors previously studied by Malamuth et al. (1991).

Follow-Up Analyses

Informed by the analyses described previously and the Confluence Model of Sexual Aggression (e.g., Malamuth et al., 1991; Malamuth, Linz, Heavey, Barnes, & Acker, 1995), which has emphasized that degree of risk for sexual aggression is primarily determined by the confluence or interaction of HM and SP, we conducted additional analyses to clarify further the findings. We first sought to obtain a single "risk score" for sexual aggression based on the confluence of both of the key composite predictors of HM and SP. We therefore divided both of these dimensions, which were continuous variables in the regression analyses, into three levels each. We achieved this by separating them into those scoring in the lowest 25% of their respective distributions, those in the middle (between the bottom 25% and top 25%), and those in the highest 25% of the distribution. We then computed degree of risk for sexual aggression by multiplying these two three-level factors. Each person could achieve one of the following resulting product risk scores (1, 2, 3, 4, 6, or 9), thereby yielding six levels of risk.

We labeled those whose resultant score was a 1 (the product of being in the lowest level of both HM and SP) as "very low risk" for sexual aggression. Those who had received a score of 2 (by having a 1 on either HM or SP but a 2 on the other variable) were considered "low risk" for sexual aggression. Similarly, those who received a total score of 3 or 4 were also labelled as part of the "low risk" group. Those whose score was a 6 (resulting from having a 2 on either HM or SP and a 3 on the other variable) were labeled as "moderate risk." Finally, those who scored in the top levels on both HM and SP received a score of 9 and were labeled as "high risk" for sexual aggression. In total, there were six levels of risk.

Before presenting the results of analyses of variance (ANOVA), the following information about some simple correlations may be of interest: The simple correlations between Pornography Use and SP ($r = .17$), and with HM ($r = .17$) and sexual aggression ($r = .17$) were significant ($p < .001$), as was the correlation ($r = .21$, $p < .001$) between the Pornography Use variable and the Confluence Model risk levels (the cross-product of SP and HM).

We conducted an ANOVA using the sexual aggression scores as the dependent variable. The independent variables were the six-level "Confluence Model" risk variable crossed with the four levels of pornography consumption. (In addition to reporting information regarding significance testing, we present here the Eta Squared statistic, which is an effect-size statistic indicating the proportion of the variability of the dependent variable explained by the independent variable). This analysis yielded significant main effects for both the Risk variable, F (5, 2829) = 22.38, $p < .0001$ (Eta Squared = .038), and Pornography Use, $F(3, 2829) = 3.61$, $p < .0001$ (Eta Squared = .010), as well as a significant interaction between these two variables, $F(15, 2829) = 3.62$, $p < .0001$ (Eta Squared = .019). Both linear ($p < .0001$) and quadratic terms ($p < .001$) were significant.

Shown in Figure 5 are the mean levels of sexual aggression for each of the cells used in this analysis. In keeping with a moderator approach suggested by the findings of laboratory studies, the data indicated that at the lower levels of risk, there was relatively little difference in the levels of sexual aggression according to levels of pornography consumption (although, as described later, some differences do reach statistical significance). All of the average scores for the four low risk levels (from 1, very low risk, to 4, low risk) ranged from 0 sexual aggression to 1.5, with the majority being below 1, regardless of their levels of pornography use. In contrast, when the level of risk determined by the Confluence Model reached a moderate level (i.e., 6), the range of scores was between a mean of 1.5 ($n = 71$) for those indicating never reading sexually explicit magazines as compared to a mean of 3.0 ($n = 31$) for those who very frequently used such magazines. When the highest Confluence Model risk levels were examined (risk level 9), the men who indicated that they very frequently used pornography ($M = 7.78$, $n = 27$) appeared to score much higher on sexual aggression than any other group (see comparisons that follow). It

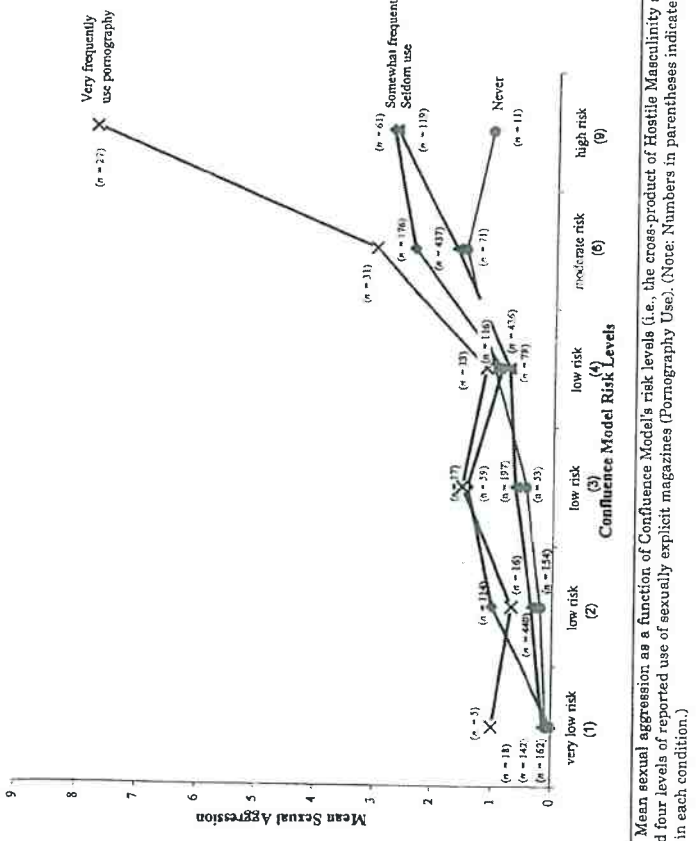

Figure 5. Mean sexual aggression as a function of Confluence Model's risk levels (i.e., the cross-product of Hostile Masculinity and Sexual Promiscuity) and four levels of reported use of sexually explicit magazines (Pornography Use). (Note: Numbers in parentheses indicate the number of participants in each condition.)

is this group that appears primarily responsible for the interaction effect observed, suggesting a particularly dangerous combination when there is a high Confluence Model risk score and very high pornography consumption.

Within-Groups Analyses

To statistically compare the effects within the various risk levels, follow-up analyses were conducted. Analyses were conducted separately within (a) the low risk group (Levels 1 through 4), (b) within the moderate and high risk groups combined (Levels of 6 and 9), and (c) separately within the moderate (Level 6) and high risk (Level 9) groups.

Low risk groups combined. Initially, analyses were also conducted within each of the four low risk groups (ranging from 1 to 4 on the confluence risk levels) separately. Within each group, there was a significant main effect of Pornography Use, but individual post hoc comparisons among means sometimes showed that the highest group significantly differed from all others (e.g., in Risk Group 1) and in some cases none of the individual mean comparisons reached acceptable levels of significance. We judged it more appropriate to combine all of these four groups, based on both theoretical and empirical considerations.

Within this combined low risk category, a significant main effect was obtained using a one-way ANOVA, $F(3, 1916) = 7.76$. $p < .0001$, Eta Squared = .012. A linear trend ($p < .002$) was found. The resulting means were 0.40 for the Never Use, 0.52 for the Seldom Use, 0.99, for the Somewhat Frequently Use, and 1.12 for the Very Frequently Use groups. The linear trend was significant ($p < .002$).

Post hoc comparisons using Tukey HSD test showed that the Very Frequently group differed from the Never group ($p < .052$) only. The Somewhat Frequently group significantly differed from the Seldom ($p < .001$) and the Never ($p < .0001$) groups. No other comparisons were significant. These data therefore indicate that there is some relationship between pornography use and sexual aggression levels, even among low risk men, but that the differences, although statistically significant, are relatively minor (sexual aggression means ranging from 0.40. to 1.12)

Moderate and high risk groups combined. An ANOVA conducted within the combined moderate (Level 6) and high (Level 9) risk groups yielded a significant main effect of Pornography Use, $F(3, 929) = 11.89$, $p < .0001$ (Eta Squared = .037). Both linear ($p < .0001$) and Quadratic ($p < .004$) effects were found. Post hoc comparisons showed that the Very Frequently group was significantly different in sexual aggression from

all of the other groups ($p < .0001$) but that none of the other comparisons reached statistical significance.

Separate Analyses for the Moderate and for the High Risk Groups

Moderate risk group. The mean sexual aggression scores within this moderate risk group ranged from 1.5 ($n = 71$) for the Never Use sexually explicit magazines to 3.03 ($n = 31$) for the Very Frequently use pornography group. The ANOVA within this group was significant, $F(3, 711) = 2.88$, $p < .05$, Eta Squared = .012. There was a significant linear trend ($p < .03$). However, none of the individual group comparisons reached statistical significance.

High risk group. Within the high risk group (risk level of 9), the range of sexual aggression means was from 1.09 ($n = 11$) for the Never Use sexually explicit magazines group to 7.78 ($n = 27$) for the Very Frequently use group. An ANOVA comparing the four levels of pornography use revealed a very strong effect, $F(3, 214) = 6.45$, $p < .0001$, Eta Squared = .083. There was a significant linear effect ($p < .002$).

The difference is dramatic for the Very Frequently use pornography group, which has a mean of 7.78, whereas all of the other high risk groups have a mean of 2.77 or below (i. e., a range of sexual aggression from 1.09 for the Never Use pornography group to 2.77 for the Somewhat Frequently group). Individual comparisons among means showed that the Very Frequently group significantly differed from all other groups ($p < .007$), but that none of the other groups significantly differed from each other. In fact, in other comparisons, this high risk/high pornography group was found to be significantly higher than all groups in the entire sample.

Discussion

Focusing on the association between men's pornography exposure (measured by degree of exposure to sexually explicit magazines) and levels of sexual aggression, we attempted to integrate the data into a unified model. Previous researchers relied on unrepresentative convenience samples and often did not account for potential overlap between pornography use and other key risk factors. In the statistical analyses presented here, we used a large representative sample of all American men who attend some form of post-high school education. These analyses built upon earlier findings from which we were able to formulate a well-supported model of the key risk factors predictive of sexual aggression. This model identified the primary confluence of two constellations, labeled HM and SP. In earlier work, the interaction of these two constellations was found to predict individual differences in levels of sexual aggression. The research reported here added the variable of Pornography Use to this Confluence Model. We examined various alternatives suggested by the research literature. The following is a summary of the findings and conclusions from these analyses.

In the first series of analyses we used structural equation modeling (SEM) and built upon the analyses previously reported by Malamuth et al. (1991). The dependent variable was a construct labeled Coercion Against Women, which included both sexual aggression and nonsexual aggression. In this first step, we added to the previously developed model only an association between SP and Pornography Use (operationally defined as the reported frequency of consumption of sexually explicit magazines). Our intent was to see if the association with sexual promiscuity might fully account for the role of individual differences in pornography usage, as suggested by the Pornography as Sexual Communication model (Model I). The data indicated that although there was a strong association between SP and Pornography Use, there remained some association between Pornography Use and Coercion Against Women, which still needed to be "accounted for" by further model development.

Further SEM analyses were consistent with both the Pornography as a Contributing Cause model (Model II) and Aggressiveness as a Cause of Interest in Pornography model (Model III). These data indicated that there is not a firm basis for preferring one over the other. Therefore, we cannot conclude on the basis of these analyses that pornography use is a cause or an outcome of sexual aggressive tendencies (or both), although the association between pornography and coerciveness does not appear to be a spurious relationship. Similarly, regression analyses showed that after controlling for the various factors identified as predictive of sexual aggression, Pornography Use still significantly entered the equation.

Additional regression analyses revealed significant interactions among HM, SP, and Pornography Use in predicting levels of sexual aggression. Follow-up analyses designed to explicate this interaction strongly supported the following conclusions:

1. High pornography use is not necessarily indicative of high risk for sexual aggression. Among men who are classified as being at relatively low risk for sexual aggression, based on their levels of HM and SP, there is only a relatively minor difference (though statistically significant) in sexual aggression between those who report different levels of pornography use (e.g., *never using it*, *seldom*, *somewhat frequently*, or *very frequently*). The clearest difference here was between those who reported *never* or *seldom* using it (average sexual aggression of about 0.40) as compared to those reporting *somewhat frequently* or *very frequently* (average sexual aggression of about 1.00).

2. In some circumstances, pornography use is indeed a very good "marker" of higher sexual aggression levels. When we considered men who were previously determined to be at high risk for sexual aggression (based on the risk factors of HM and SP), we found that those who are additionally very frequent users of pornography were much more likely to have engaged in sexual aggression than their counterparts who consume pornography less frequently. The strongest difference here is between high risk participants who report very frequent pornography use as compared to other high risk participants who reported varying lower levels of pornography use. Indeed, those who are at high risk for sexual aggression (based on the confluence of HM and SP) and reported very high pornography use were found to have very high average levels of sexual aggression (average of about 7.8) that differed significantly from all other groups in the entire sample. It should be noted, however, that although we have used some key statistical controls for overlap with other variables, any form of correlational analysis is limited by its inability to control for all such overlaps. In this regard, future researchers should particularly assess the potential overlap between very frequent use of sexually explicit magazines and use of other types of nonsexual and sexual media, including violent pornography. It is noteworthy, however, that in an experimental study (Check & Guloien, 1989) examining the effects of exposure to "Nonviolent, dehumanizing pornography" over a total of three separate exposures, significant effects on various measures of sexually aggressive tendencies and behavior were found only for those who were habitually high pornography consumers. Although that study had a number of limitations noted by the authors, their data and the present findings point to the need in future research to more closely study habitually high pornography consumers.

The Importance of Representative Samples

In the present research, in contrast to earlier studies of this type, we used a representative sample of the population. To illustrate how nonrepresentative samples may yield differing results, we examined what might have been the correlations found within our sample between pornography use and sexual aggression, if we had not had access to the full range of the distribution and had only sampled some portions (as is likely to occur in many convenience samples). In other words, we wanted to discover whether different magnitude of correlations would emerge if only certain portions of our full sample were used, possibly leading some reviewers to erroneously conlude that there was not a reliable association.

When we selected all of the participants except for those classified as being the very highest risk for sexual aggression, we obtained a relatively low correlation between pornography use and sexual aggression, $r = .12$ ($n = 2{,}644$). Similarly, if we used a subsample including only men from within the middle of our statistical distribution (groups 2, 3, and 4 in the classification described earlier) we obtain a correlation of only .095 ($n = 1{,}693$). In contrast, if we included participants only from the two extremes of risk (groups 1 and 9), the same analysis yielded a much higher correlation of .30 ($n = 445$). Correspondingly, even after adjusting for the differing sample sizes, it is not difficult to see how researchers obtaining such differing correlations (often relying on much smaller samples than in our subsample analyses) would reach what appear to be conflicting conclusions.

Toward an Integration of the Literature

In the research we have described herein, we first addressed the issues raised by critics regarding the limitations of laboratory studies. We conducted analyses of behaviors occurring in naturalistic settings and applied important controls. Results demonstrated strong support for the moderator approach, which we proposed and tested in prior laboratory and related studies. The findings obtained here may be viewed within the emphasis in our research program on the Confluence Model of sexual aggression (Dean & Malamuth, 1996; Malamuth, 1986, 1998a; Malamuth et al., 1991; 1995). When applying it to media influences, the issue becomes how different types of people seek out and respond to media content differently in accordance with their individual predispositions and their on-going social relationships (also see Allen et al., 2000). Put simply, if a person has relatively aggressive sexual inclinations resulting from various personal and/or cultural factors, some pornography exposure may activate and reinforce associated coercive tendencies and behaviors. In contrast, if a person has relatively nonaggressive sexual inclinations, pornography exposure may activate and reinforce associated noncoercive feelings and acts.

A number of recent "priming" studies are relevant to this analysis. The results of these studies suggest that priming sexuality-associated mechanisms (perhaps particularly via some of the types of images frequent in pornographic media) may activate power and hostility cognitions in men at relatively high risk for sexual aggression. For example, Bargh, Raymond, Pryor, and Strack (1995) subliminally primed sexually aggressive and nonaggressive men with power-related or neutral words. They found that sexually aggressive men had a habitual association between power and sex. Similarly, Zurbriggen (2000) found that such

strong power-sex associations predicted higher levels of sexual aggression. Leibold and McConnell (1999) used a sequential priming paradigm and found support for the Confluence Model's predictions (Malamuth, 1986; Malamuth et al., 1995) that sexually aggressive men, in contrast to their nonaggressive counterparts, are very likely to have habitual cognitive representations relating the concept of women to both sex and hostility.

Although they did not examine individual differences among men, in a series of three priming studies Mussweiler and Forster (in press) found that the mere presence of sexual stimuli may increase men's tendency to behave aggressively. In the first study, they demonstrated that sex-related prime words facilitated lexical decisions for aggression-related words. In the second study, sex priming was found to facilitate aggressive behavior. In the third study, they found that this facilitation was specific to aggressive behavior directed against a female target. We believe that it would be important in future research to use an individual difference variable of proclivity to sexually aggress, and we predict that the type of effects reported by Mussweiler and Forster will be moderated by this dimension.

Considering Media Effects

As we have emphasized throughout this article, the current data do not enable us to conclude which is the cause and which is the effect, nor to test directly bidirectional influences. The laboratory studies showing cause and effect of sexually violent media, as well as those indicating that even nonviolent graphic sexual media may increase aggression for some individuals (see meta-analyses by Allen, D'Alessio, & Brezgel, 1995; Allen, Emmers, et al., 1995 described earlier), do support the "pornography as a cause" interpretation of the current findings, at least as a serious potential under some conditions. At the same time, the fact that the clearest difference was between the high risk men who reported very frequently using pornography and all other men (also see Frank, 1990) also suggests a different speculation. It may be that there are certain compulsive characteristics of these individuals such that even "somewhat frequent" exposure to pornography (which may "satisfy" others) is not sufficient for these individuals, and they are constantly seeking more exposure to such stimuli. The heavy use of pornography, therefore, may be primarily a symptom of their compulsion, although it could also certainly "add fuel to the fire" and be a "tipping point" that in some cases moves a strong tendency beyond a threshold necessary to elicit actual behavior (Gladwell, 2000; Granovetter & Soong, 1983).

Cross-Cultural Comparisons

One of the most glaring apparent contradictions in the literature on pornography results from research conducted in different cultures (as well as in the different methodologies used). In research conducted primarily in Denmark (Kutchinsky, 1970, 1991) and in Japan (Diamond & Uchiyama, 1999), there has not been evidence of increased criminal sexual acts as a function of the wider availability of pornography. In commenting on such findings, Malamuth and Donnerstein (1984) suggested some time ago that "there may be considerable variations among individuals within a culture in susceptibility to media influences. Similarly, cultural factors may create major individual differences in the role and impact of media stimuli on members of differing societies" (p. 141). This point was also aptly made by Giglio (1985).

> The cultural environment in each country is a factor to consider in understanding the prevailing public attitudes toward pornography. The Danes appear to enjoy a more natural approach to sex in general. Public nudity, for example, is more acceptable in Denmark than in the United States. . . . In a society where it is possible on a warm summer Sunday to visit the Rosenborg Palace in the heart of Copenhagen and see dozens of partially nude women in the surrounding gardens, usually accompanied by family or friends, without the slightest public disturbance, lends creditability to Kutchinsky's theory that the Danes lack the sustaining desire for pornography to make it a profitable domestic business. Imagine the consequences if the previous scene were to be shifted to Central Park in New York City. The likely disorder that would result in the Central Park scene when compared to the serene acceptance of partial nudity in Copenhagen illustrates most dramatically why, on sexual matters, Denmark is an improbable model for the United States to emulate. (pp. 289-290)

In keeping with the position that aggressive-sexual predispositions may moderate the impact of exposure to certain types of pornography, it would be expected that within countries such as Denmark, fewer men than in the United States are at high risk for sexual aggression. If this is correct, then the lack of an association between pornography use and sexual aggression would map nicely on to the findings we have obtained here. Although we do not have direct evidence bearing on this issue, there are some potentially relevant data. Zak and Knack (in press) compared the levels of trust that people had for each other in various countries throughout the world. They found strong differences, with countries such as Denmark being at the very highest levels of trust between people, and these levels were considerably higher than in the United States. To the extent that such general levels of trust may also be associated with trusting between men and women (an important component of the HM construct), men may be at relatively low levels of

risk for sexual aggression in a society such as Denmark.

Consider on a broader level the recent discussion by Glassner (1999) of research on the effects of media violence. Following the conservative commentator David Horowitz, Glassner wrote,

> Viewers in Detroit, Michigan see the same TV shows as viewers in Windsor, Ontario, just across the river. Yet the murder rate in Detroit has been 30 times that in Windsor. TV shows do not kill or maim people. Guns do. It is unregulated possession of guns, more than any other factor, that accounts for the disparity in fatality rates from violent crimes in the United States compared to most of the world. (pp. 439-440)

We would argue that Glassner is erring by searching for the single cause or primary factor. In the context of the other factors contributing to the high rate of violence in Detroit, media violence may indeed play a role. Consider the "guns cause" that Glassner emphasizes. What if we point to a country, such as Israel, where many people regularly carry guns in the streets and in their homes, and yet the rate of violence and violent crimes has been far lower than in the United States? Does this mean that guns are not part of the confluence of factors that interact to affect violence in the United States?

Concluding Remarks

Although some risk factors may be considered more "primary" than others (e.g., media exposure may not be as initially formative as some early home experiences), overall one needs to consider the various interactive factors that can potentially act in a "synergistic" manner with other factors, exacerbating or counteracting them (see Malamuth & Addison, in press, for a discussion of a multilevel approach to understanding aggression). Different combinations of various risk and neutralizing factors can affect the probability of the occurrence of varied behavioral outcomes. Causation may not be best conceived, as in the legal system, only in terms of a "but for" approach (i.e., if it were not for that factor, the outcome would not have occurred [Hart & Honore, 1985]). Instead, scientific causal models may also be better framed in terms of the confluence of several factors, each of which potentially may not have a significant impact without the combined influence of other relevant factors. Further, the "cumulative-conditional-probability" conceptualization described earlier emphasizes that relevant factors are best conceived as affecting the probabilities of differing outcomes, not as necessarily "deterministic" of a particular outcome.

It is important to keep in mind that not only are pornographic stimuli only one part of a larger corpus of mass media images, but the role of media stimuli cannot be fully appreciated in isolation from other variables. Consideration must be given to the role of the media's complex interactions with other influences. As we have attempted to emphasize, depending on such factors as the cultural milieu, the individual's background, the particular content of the stimuli, the type of response focused on, and the way "harm" is defined, differing conclusions may result. Although sometimes these data may appear contradictory, a theoretical model that takes such distinctions into account is likely to reveal that the findings in this area are actually much more consistent. Associations between pornography consumption and aggressiveness toward women could be explained by a circular relationship between high coercive tendencies and interest in certain content in pornography, whereby aggressive men are drawn to the images in pornography that reinforce and thereby increase the likelihood of their controlling, impersonal, and hostile orientation to sexuality. The way relatively aggressive men interpret and react to the same pornography may differ from that of nonaggressive men. Clearly, the data showing particularly strong links for some men between sex, power, and, to some degree, aggression at both the arousal/emotional (e.g., Allen et al., 2000; Bernat, Calhoun, & Adams, 1999; Lohr, Adams, & Davis, 1997; Malamuth & Check, 1983; Malamuth, Check & Briere, 1986) and cognitive (Bargh et al., 1995; Leibold, & McConnell, 1999; Mussweiler & Forster, in press) levels are consistent with this hypothesis.

The current findings do suggest that for the majority of American men, pornography exposure (even at the highest levels assessed here) is not associated with high levels of sexual aggression (although aggressive tendencies may be expressed in other behavioral manifestations than in actual aggressive behavior when there is not the full confluence of factors that elicits actual aggression [e.g., Malamuth & Thornhill, 1994]). But among those at the highest "predisposing" risk level for sexual aggression (a little above 7% of the entire sample), those who are very frequent pornography users (about 12% of this high risk group) have sexual aggression levels approximately four times higher than their counterparts who do not very frequently consume pornography. Although not nearly as dramatic an elevation, the coercion levels found for similar risk subgroups (such as the moderate risk group who are very frequent pornography consumers) suggests the need for increased research attention on the use and impact of pornography in men at elevated risk for sexual aggression.

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Violent Pornography and Self-Reported Likelihood of Sexual Aggression

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Two hundred twenty-two undergraduate males were administered an "attitudes survey" examining pornography use, attitudes, and self-reported likelihood of rape (LR) or using sexual force (LF). Nonviolent pornography was used by 81% of subjects within the last year, whereas 41 and 35% had used violent and sexually violent pornography, respectively. Twenty-seven percent of subjects indicated some hypothetical likelihood of raping or using sexual force against a woman. Discriminant function analysis revealed that use of sexually violent pornography and acceptance of interpersonal violence against women were uniquely associated with LF and LR. It is hypothesized that the specific fusion of sex and violence in some pornographic stimuli and in certain belief systems may produce a propensity to engage in sexually aggressive behavior. Results are interpreted in terms of Malamuth and Briere's (1986, *Journal of Social Issues*, **42**, 75–92) model of the effects of sexually violent media.

Perhaps one of the most controversial areas of social psychology concerns the potential effects of sexually explicit media materials on sexual violence. Although the U.S. Commission on Obscenity and Pornography (1970) concluded that such stimuli had no known deleterious or antisocial effects,

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early criticism of the Commission's report (e.g., Berkowitz, 1971; Cline, 1974; Dienstbier, 1977) stimulated a "new wave" of research in this area. Such research has generally modified the Commission's conclusions, suggesting, for example, that the effects of sexual arousal on subsequent behavior are related to the type of erotic materials used to induce such arousal. Specifically, it appears that early studies (including those summarized by the Commission) failed to include materials of a sexually violent or aggressive nature and did not examine the possibility that exposure to such stimuli could have specific effects on violence against women as opposed to aggression in general (Malamuth, 1984; Malamuth & Briere, 1986).

Recent research on the effects of aggressive-pornographic[1] media portrayals indicate that, contrary to earlier expectations, exposure to such materials may lead to men's increased acceptance of interpersonal violence against women (e.g., Demaré, 1985; Malamuth & Check, 1981a), more frequent violent sexual fantasies (Malamuth, 1981a), and a greater willingness to aggress against women in a laboratory setting (e.g., Donnerstein & Barrett, 1978; Malamuth, 1984). There is also evidence that exposure to sexually violent depictions may alter the recipient's perception of women and rape. Linz, Donnerstein, and Penrod (1984), for example, exposed subjects to a relatively large "dose" (approximately 2 hours per day for 5 days) of feature-length sexually violent films and found evidence of a desensitizing effect—subjects perceived the films to be less violent, less offensive, and less degrading to women by the last day of viewing. In addition, these subjects later rated the victim in a videotaped rape trial as less injured than did a control group of subjects who saw no such films.

Although the studies to date suggest reason for concern that sexually violent depictions may influence viewers' attitudes, perceptions, and, under certain circumstances, behavior toward women, the research falls short of predicting to what extent one's viewing of violent pornography might translate into a propensity to rape or commit other forms of sexual violence. In this regard, Malamuth and Briere (1986) hypothesize an "indirect" model of pornography effects. Specifically, sexually violent media and other social stimuli, in combination with person-specific variables (e.g., childhood experiences) are thought to produce rape-supportive cognitions and perceptions which, in the context of other phenomena (e.g., peer support), may generate sexually aggressive behaviors or proclivities. From this perspective, exposure to certain types of media stimuli

[1] The term "pornography" is used in its most general context in this paper, referring to sexually explicit materials which may or may not contain violence against women. This definition seeks to avoid current disagreements over where "erotica" ends and "pornography" begins.

may be viewed as a contributory, but perhaps not sufficient, condition in the development of sexual aggression.

Despite the possible importance of pornography in the study of sexual aggression, however, this variable has been poorly defined in the literature, especially in terms of discriminating between violent and nonviolent stimuli (Malamuth, Check, & Briere, 1986). Instead, researchers in this area typically rely on subjects' own notions of what constitutes "pornography," and do not address the relative presence or absence of violence, per se. Given the possible differential impact of violent versus nonviolent depictions on subsequent behavior, this ambiguity may limit the interpretability of nonspecific pornography effects studies.

One study which did discriminate between types of sexually explicit material, however, correlated university males' exposure to violent and nonviolent pornography with their attitudes toward women and rape (Garcia, 1986). The author found that although consumption of nonviolent pornography did not correlate with such attitudes, there was a small association between violent pornography use and both traditional attitudes regarding women and greater "pro rape" beliefs. Unfortunately, this research utilized a simple correlational design (averaged *r*s) and did not relate pornography use to any measure of sexually violent proclivities or behaviors.

Another problem in research on sexually violent media involves, in fact, the covariation between subjects' endorsements of rape-supportive beliefs and their use of pornography. In the presence of a significant association between these two variables (e.g., Briere, Corne, Runtz, & Malamuth, 1984; Garcia, 1986), it is unclear whether a pornography effect may, in actuality, constitute a preexisting attitudes effect. For example, the current literature cannot rule out the possibility that sexually violent attitudes and beliefs might create interest both in pornography and in sexually violent behavior, such that any relationship found between pornography use and sexual violence would be spurious.

A study designed to address such covariation might compare the importance of attitude versus pornography variables in the statistical prediction of some concomitant measure of sexual violence. For example, one relatively conservative approach (Briere, in press) might be to examine the effects of each variable controlling for the effects of all others (the simultaneous least-squares method) or a test might be made of the incremental contribution of pornography use after the effects of rape-supportive attitudes had been established (the hierarchical least-squares method). Given Malamuth and Briere's model of indirect pornography effects, one would expect violent pornography use to be associated with sexual violence above and beyond rape-supportive attitude effects, since such pornography is hypothesized to impact on a variety of intermediate

variables including, but not limited to, attitudes and beliefs. If, however, pornography use is merely a correlate of rape-supportive attitudes, use of sexually violent materials would not make a unique contribution to the prediction of sexually violent behaviors or proclivities.

Given the concerns outlined above, the present study sought to address two issues. The first involved the accurate assessment of males' use of violent and nonviolent pornography. Emphasis was therefore placed on differentiating between these two types of materials. Moreover, because sexually violent pornography involves both themes that contain explicitly sexual content (e.g., rape and forced sexual acts) and themes that are more overtly aggressive or "sadistic" (e.g., bondage, whipping, or torture), and given the potentially different impacts of each, an attempt was made to differentiate between use of predominantly violent versus sexually violent pornographic materials.

Our second interest was to examine the association between use of these three forms of pornography (nonviolent, violent, and sexually violent) and measures of subjects' self-reported propensity to engage in sexual aggression. Based on the existing literature, we hypothesized that sexually violent pornography (SVP) use would be associated with self-reported likelihood of sexual violence, whereas use of nonviolent pornography (NVP) would not. The relationship between use of predominantly violent pornography (VP) and the criterion measure was less easily hypothesized. One might argue that this type of material is similar to completely nonsexual aggression (e.g., battery or assault), and thus less related to acts of rape and other seemingly sexual crimes. Previous research, however, has established a link between sexual arousal to nonsexual aggression and arousal to rape (e.g., Abel, Barlow, Blanchard, & Guild, 1977; Malamuth et al., 1986). These findings suggest that VP effects might lie somewhere between the anticipated nil effects of NVP and the hypothesized significant impact of SVP. Alternatively, a "feminist" analysis, stressing the violent, misogynist aspects of rape (e.g., Brownmiller, 1975; Burt, 1980), might predict that VP would be *most* associated with self-reported likelihood of sexual aggression.

METHOD

Two hundred twenty-two male undergraduate students were randomly selected from an introductory psychology subject pool and administered an "attitudes survey." This questionnaire consisted of 175 items tapping sexual and social attitudes, beliefs, perceptions, and behaviors. In addition to items pertaining to use of sexually violent, predominantly violent, and nonviolent pornography, scales developed by Burt (1980) assessing rape-myth acceptance (RMA), acceptance of interpersonal violence against women (AIV), and adversarial sexual beliefs (ASB) were included. These scales have been shown in a number of studies to relate to subjects' self-reports of both a likelihood of violence against women and actual instances of sexual aggression (e.g., Briere, 1987; Briere et al., 1984; Malamuth, 1981a,

1981b, Malamuth et al., 1986). Also present were the short form of Spence and Helmreich's (1978) Attitudes toward Women Scale (AWS), and two items measuring self-reported likelihood of rape (LR) and of using sexual force (LF). The latter two variables were derived from a question which stated "If you could be assured that no one would know and that you could in no way be punished for engaging in the following acts, how likely, if at all, would you be to commit such acts as . . . ." Embedded within distractor items such as "oral sex" and "group sex" were the two variables of interest: "rape," and "forcing a woman to do something sexual that she didn't really want to do," each rated on a 5-point scale ranging from "not at all likely" to "very likely." The LR item has been related to a variety of attitudinal, physiological, and behavioral indices of actual sexual aggression (e.g., Briere & Malamuth, 1983; Malamuth, 1981a, 1981b; Malamuth & Check, 1983; Tieger, 1981), leading Malamuth (1984) to argue for its construct validity as a measure of relative propensity to rape. The LF item has been used successfully to identify males hypothetically prone to sexual aggression who nevertheless indicate no likelihood of raping (Briere & Malamuth, 1983).

Subjects' use of pornography was assessed by their responses to the question "In the last year, how often have you used sexually explicit or pornographic materials (e.g., books, magazines, films, videotapes) that depicted . . . ." Following this question were 11 different acts, each rated on a 7-point scale ranging from "never" to "daily." Embedded within distractor items such as "group sex" and "female homosexual acts" were those acts used in the present study to identify three categories of pornography: explicitly sexually violent (SVP), represented by the higher frequency of two acts, (a) "a man forcing a woman to perform a sexual act against her will" or (b) "rape of a woman (or women) by a man (or many men)"; violent (VP), represented by the highest frequency of three acts; (a) "bondage of women," (b) "torture or mutilation of women," or (c) "whipping, spanking, or beating of women"; and nonviolent (NVP), represented by the frequency of the final item, "mutually consenting sex between a man and a women (not involving any of the above themes)."[2]

Statistical analysis proceeded in three stages. In the first stage, the distributions of the pornography frequency data were examined for evidence of extremely positive or negative skew. In the event of significant departure from normality, a procedure recommended by Tabachnick and Fidell (1983) was employed: for positive skew a log 10 transformation was applied, whereas negatively skewed distributions were first "reflexed" (reversed) to a positive skew, then subjected to a log 10 transformation. The second stage involved converting subjects' LR and LF scores into one of three categories of increasing sexual violence, as per Briere and Malamuth (1983): (1) no future likelihood of force or rape (LF^-/LR^-), (2) some future likelihood of force but not rape (LF^+/LR^-), or (3) some future likelihood of both force and rape (LF^+/LR^+). Although a fourth combination of LF and LR was also possible (LF^-/LR^+), this category was eliminated given the counterintuitive notion of considering rape but not sexual force (Briere & Malamuth, 1983). The final stage of analysis involved using the Burt (1980) and Spence and Helmreich (1978) attitude scales (RMA, AIV, ASB, AWS) and the transformed pornography categories (SVP, VP, NVP) to discriminate between the three levels of willingness to commit sexual violence. Two separate discriminant function analyses were planned for this last stage: first, a simultaneous analysis

[2] Although NVP was easily defined as depictions of "consenting" sexual contact, it was felt that SVP and VP, being more complex stimuli, might require more than one type of act to adequately tap their presence. In both cases, the act with the highest frequency was used to represent the relevant pornography category, since summing the options within a category might produce an inflated value. For example, exposure to a portrayal involving torture, bondage, and whipping is nevertheless a single, albeit complex, event—not three, as would be indicated by a summative measure of violent pornography.

TABLE 1
FREQUENCY DISTRIBUTIONS OF LF AND LR FOR THREE LIKELIHOOD OF FORCE AND/OR RAPE GROUPS

	LF^-/LR^{-b}		LF^+/LR^{-c}		LF^+/LR^{+d}	
Score[a]	LF	LR	LF	LR	LF	LR
1	150	150	0	33	0	0
2	0	0	20	0	3	3
3	0	0	12	0	7	8
4	0	0	1	0	3	3
5	0	0	0	0	2	1
Total	150	150	33	33	15	15

[a] A score of 1 indicates no likelihood; a score of 5 indicates very high likelihood.
[b] Subjects reporting no likelihood of force or rape.
[c] Subjects reporting some likelihood of force but not rape.
[d] Subjects reporting some likelihood of both force and rape.

of all attitude and pornography variables to assess the unique contributions of each to a discrimination among levels of potential sexual aggression, and second, a hierarchical entry procedure entering the attitudinal variables first, then assessing the additional discriminatory power afforded by each of the pornography variables.

RESULTS

Seventeen of the 222 subjects in this study failed to complete the entire questionnaire, and thus were omitted from subsequent analyses. Of the 205 remaining subjects, 150 (73%) were classified as LF^-/LR^-, 33 (16%) as LF^+/LR^-, and 15 (7.5%) as LF^+/LR^+. Seven subjects (3.5%) indicated some likelihood of rape but not force (LF^-/LR^+) and were eliminated from further analysis. Frequency distributions of LF and LR for the remaining three groups appear in Table 1.

As had been anticipated, frequency distributions for the pornography variables were highly skewed—positively for SVP and VP, and negatively for NVP. Even after intervals in each scale were collapsed to three broader levels (1 = "never," 2 = "1–2 times," 3 = "more often"), skewness was 1.15, 0.95, and −0.64, respectively. Log 10 transformations reduced this skewness by an average of 0.28. As shown in Table 2, 81% of subjects had used nonviolent pornography in the past year, as compared to 41% and 35% for predominantly violent and sexually violent pornography, respectively. Users of one type of pornography were also more likely to use the remaining types as well, as indicated by the correlations between NVP and SVP ($r = .31$), NVP and VP ($r = .35$), and SVP and VP ($r = .57$), all of which were significant at $p < .001$ (see Table 3).

TABLE 2
FREQUENCY DISTRIBUTIONS FOR THREE[a] TYPES OF PORNOGRAPHY USE

Frequency of use during last year	SVP		VP		NVP	
	f	%	*f*	%	*f*	%
Never	129	65	117	59	38	19
1–2 times	43	22	56	28	58	29
More often	26	13	25	13	102	52
Total	198	100	198	100	198	100

[a] SVP, sexually violent pornography; VP, violent pornography; NVP, nonviolent pornography.

Discriminant Function Analyses

Simultaneous analysis. When all attitude and pornography variables were entered into the discriminant equation simultaneously, one significant function resulted, $R_c = .453$, $\chi^2 (14) = 46.26$, $p < .0001$. As shown in Table 4, both the discriminant structure coefficients and the univariate *F* tests indicate that attitudes (AWS, RMA, AIV, ASB) and pornography use (SVP, VP, NVP) discriminated among levels of potential sexual aggression. Inspection of the standardized discriminant function coefficients, however, reveals that only one attitude scale (AIV) and one type of pornography use (SVP) made unique contributions to the discriminant equation. Analysis of the group centroids indicated that the attitudinal and pornographic variables could not discriminate between LF^-/LR^- and LF^+/LR^- ($F(7, 189) = 1.15$, *ns*), but that LF^+/LR^+ subjects scored

TABLE 3
INTERCORRELATION OF ATTITUDE AND SELF-REPORTED PORNOGRAPHY USE VARIABLES[a]

	RMA	AIV	ASB	AWS	SVP[1]	VP[2]	NVP[3]
RMA	1.0	**.59**	**.55**	**−.54**	.05	.06	.08
AIV		1.0	**.39**	**−.40**	.03	.07	−.03
ASB			1.0	**−.45**	.05	.12	−.06
AWS				1.0	−.01	−.09	−.04
SVP					1.0	**.57**	**−.31**
VP						1.0	**−.36**
NVP							1.0

Note. Boldface correlations are significant at $p \leq .01$ (one-tailed test).

[a] RMA, Rape-Myth Acceptance; AIV, Acceptance of Interpersonal Violence against women; ASB, Adversarial Sexual Beliefs; AWS, Attitudes toward Women Scale; SVP, sexually violent pornography use; VP, violent pornography use; NVP, nonviolent pornography use (reversed; therefore the sign is the opposite of the true relationship).

TABLE 4

MEANS AND STATISTICAL SIGNIFICANCE OF PREDICTOR VARIABLES FOR THREE LEVELS OF LIKELIHOOD OF FORCE AND/OR RAPE

	Means[a]						
Variable	LF^-/LR^-	LF^+/LR^-	LF^+/LR^+	$F(2, 195)$	p	c_{str}[b]	c_{sta}[c]
RMA	45.0[a]	49.5[b]	57.3[a]	7.01	.0011	**.523**	.052
AIV	16.2[a]	17.6[b]	22.9[ab]	10.89	.0001	**.656**	**.471**
ASB	30.8[a]	32.2[b]	37.9[a]	5.84	.0034	**.479**	.135
AWS	31.3[a]	29.9[b]	25.6[a]	5.45	.0048	**−.466**	−.202
SVP[d]	0.10[a]	0.16[b]	0.33[a]	12.21	.0001	**.696**	**.662**
VP[e]	0.13[a]	0.16[b]	0.27[a]	4.35	.0147	**.415**	−.111
NVP[f]	0.20[a]	0.14[b]	0.06[a]	4.30	.0149	**−.402**	−.224
centroids	−0.22	0.26	1.65				

[a] Means sharing a common superscript are different at $p < .05$ (Scheffe).

[b] Discriminant function structure coefficients, considered meaningful (boldface) at $c \geq .35$.

[c] Discriminant function standardized coefficients, considered meaningful (boldface) at $c \geq .35$.

[d] Sexually violent pornography use, log 10 transformed.

[e] Violent pornography use, log 10 transformed.

[f] Nonviolent pornography use, reversed and log 10 transformed.

TABLE 5
DISCRIMINANT FUNCTION COEFFICIENTS AND STEP 2 *F*s TO ENTER FOR HIERARCHICAL ANALYSIS

Variable	c_{str}[a]	c_{sta}[b]	*F* to enter[c]	*p*
RMA	**.532**	.005	—	—
AIV	**.672**	**.507**	—	—
ASB	**.491**	.163	—	—
AWS	**−.477**	−.189	—	—
SVP	**.711**	**.684**	—	—
VP	—	—	0.049	ns
NVP	—	—	1.109	ns

[a] Discriminant function structure coefficients, considered meaningful (boldface) at $c >$ .35.

[b] Discriminant function standardized coefficients, considered meaningful (boldface) at $c >$ .35.

[c] *F*s to enter for variables before step 3.

higher on the function than did LF^+/LR^- subjects ($F(7, 189) = 2.91$, $p < .007$) or LF^-/LR^- subjects ($F(7, 189) = 6.61$, $p < .0001$).

Hierarchical analysis. Hierarchical discriminant analysis began with the simultaneous entry of the four attitude variables, after which the three pornography variables were allowed to complete for stepwise entry (given a minimum *F* to enter of 1.5). Entry of the attitude variable set (step 1) resulted in a significant discriminant equation, $F(8, 384) = 3.23$, $p < .0014$. At this point (prior to step 2), the *F*s to enter for the three pornographic variables were as follows: SVP, $F(1, 190) = 9.72$, $p < .001$; NVP, $F(1, 190) = 3.70$, *ns*; and VP, $F(1, 190) = 2.57$, *ns*. At step 2 SVP was entered, after which the *F*s to enter for the remaining two pornography variables dropped below 1.5. The final discriminant function, containing the four attitude scales and the SVP variable, was highly significant, $R_c = .445$, $\chi^2 (10) = 43.84$, $p < .0001$. Examination of the standardized and structure coefficients reveals that although all four attitude scales and SVP were meaningful discriminators of likelihood of sexual aggression, only AIV and SVP made unique contributions (see Table 5).

DISCUSSION

The findings of the present study may be divided into two areas: (1) the frequency of university males' self-reported likelihood of sexual aggression and the extent of their use of pornography, and (2) the relative importance of subjects' attitudes and recent use of three forms of pornography in discriminating self-reported willingness to rape and/or use sexual force.

Likelihood of Sexual Aggression and Use of Pornography

The current findings are in agreement with similar studies reporting that many university males, given a hypothetical absence of penality, express some willingness to rape or sexually aggress against a women. Interestingly, the combined frequencies of LF and LR in the present study were approximately half the magnitude (27% vs 60%) of those reported by Briere and Malamuth (1983), even though the samples were drawn from universities of generally equivalent undergraduate stature within the same city. Data available to the authors, however, indicate that despite roughly equivalent SES, the current sample includes subjects of a younger age and lesser sexual experience, the latter of which has been tied to lower self-reported sexual aggression in at least one study (Kanin, 1957). It should be noted, however, that despite the lower level of self-reported LR and LF in the present study, the relationship between these variables—and their association with the attitude variables—appears highly similar to other data in this area (e.g., Briere & Malamuth, 1983; Malamuth, 1981a, 1981b).

Results from the present study suggest that pornographic materials, both violent and nonviolent, are widely used among university males. More than three quarters of the current sample reported using nonviolent, sexually explicit materials within the last year, and nearly half used some form of pornography depicting violence against women. Use of one type of pornography was also associated with use of other forms, especially in the case of SVP and VP.

Discriminating Likelihood of Sexual Aggression

The results of both the simultaneous and hierarchical discriminant analyses suggest that self-reported likelihood of sexual aggression is a partial function of conservative and rape-supportive attitudes and use of pornographic materials. The finding vis-à-vis attitudes was not unexpected, given other data in this area, although the contribution of conservative attitudes toward women is a newer finding. Interestingly, although the discriminant structure coefficients, which examine the correlation of each variable with the entire discriminant function, suggest that all attitude variables were meaningful discriminators, the standardized discriminant coefficients indicate a more specific relationship. The latter, which portray the effects of each variable controlling for the effects of every other variable in the equation, indicate that only acceptance of interpersonal violence (AIV) made a unique contribution to attitudinal discrimination. Thus, it appears that conservative attitudes toward women, adversarial sexual beliefs, and rape-myth acceptance may allow discrimination between

levels of LR/LF only to the extent that they covary with acceptance of interpersonal violence against women.

Perhaps the most significant finding in the present study, however, is the differential contributions of various types of pornography use in discriminating self-reported likelihood of sexual violence. Although all three types of pornography use correlated with the significant discriminant function (as indicated by the structure coefficients), both the standardized coefficients and the hierarchical results indicated that only sexually violent pornography use made a unique contribution. In other words, although predominantly violent and nonviolent pornography use correlate, to some extent, with likelihood of sexual aggression, this relationship may be an artifact of their correlations with use of sexually violent materials. Such data suggest a specific effect of sexually violent pornography that does not occur for either predominantly violent or strictly sexual depictions.

AIV and SVP: The Fusion of Sex and Violence

The unique importance of acceptance of interpersonal violence and use of sexually violent pornography in the current discriminant results is intriguing in that they both contain themes involving a combination of sex and violence. As noted by Briere, Malamuth, and Check (1985), the AIV scale consists of several orthogonal components, the largest of which they name "women enjoy sexual violence" (p. 339). Specifically, the AIV includes items such as "being roughed up is sexually stimulating to many women" and "sometimes the only way a man can get a cold woman turned on is to use force," concepts not well represented in Burt's other scales (ASB, RMA) or the AWS. Similarly, sexually violent pornography can be discriminated from predominantly violent and nonviolent pornography by the former's fusion of sexual and violent stimuli (Malamuth, 1984). Given the specific power of AIV and SVP to predict likelihood of sexual aggression, the present authors suggest that it is the unique combination of support for sex *and* aggression in some pornographic stimuli and certain attitudes that produces a proclivity toward sexual violence, a tendency that may interact with other relevant variables (e.g., peer support for violence) to result in actual sexual aggression (Malamuth, 1984; Malamuth & Briere, 1986).

Finally, the hierarchical analysis reported in the present study suggests that pornography use is not primarily the result of preexisting rape-supportive attitudes, since SVP made a meaningful contribution to discrimination even after attitude effects were held constant. Further, the simultaneous discriminant results reveal large and relatively equal standardized coefficients for AIV and SVP, indicating that each is a good discriminator independent of the other. Such data offer partial support for Malamuth and Briere's (1986) multifactor model of the etiology of

sexual violence by suggesting, for example, two separate "routes" to self-reported likelihood of sexual aggression (attitudes and pornography), and by providing further evidence for the hypothesis that the specific fusion of sex and violence may contribute to sexual aggression.

In the absence of a causal analysis, however, the current data do not directly support or disconfirm the assertion of the Malamuth and Briere model that rape-supportive attitudes are partially the result of exposure to pornography and other social phenomena, although it should be noted that, unlike Garcia (1986) and Briere et al. (1984), simple correlation analysis in the present study did not reveal significant associations between attitudes and pornography per se. These findings are also constrained by the possibility that the youth and low sexual experience of the current sample may have decreased the overall amount of self-reported likelihood of sexual violence, relative to other university samples. Finally, the correlational nature of the current data obviously precludes any concrete conclusions regarding the causal antecedents of sexual violence. In this regard, further research in this area might (a) use causal modeling or path analytic procedures to examine the directional relationship between sexually violent pornography use, rape-supportive attitudes, and sexual violence, with special attention to intermediate variables that might moderate these relationships, and (b) use as criterion variables additional indices of sexual aggression (e.g., self-reports of past behavior), since recent research (Malamuth, in press) suggests that sexual aggression is a multidimensional phenomenon which may be best studied with several different measures.

In conclusion, data from the current investigation indicate that (a) both nonviolent and violent pornographic materials were commonly used by at least one sample of university males, and (b) males' use of sexually violent pornography was specifically associated with self-reported hypothetical likelihood of engaging in sexual aggression against women. Along with the data on sexually violent attitudes, these findings emphasize the possible social component of sexual violence, and suggest that, to the extent that LF/LR measures approximate actual sexual aggression, certain forms of pornographic stimuli may have specific antisocial effects.

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Pornography and Attitudes Supporting Violence Against Women: Revisiting the Relationship in Nonexperimental Studies

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A meta-analysis was conducted to determine whether nonexperimental studies revealed an association between men's pornography consumption and their attitudes supporting violence against women. The meta-analysis corrected problems with a previously published meta-analysis and added more recent findings. In contrast to the earlier meta-analysis, the current results showed an overall significant positive association between pornography use and attitudes supporting violence against women in nonexperimental studies. In addition, such attitudes were found to correlate significantly higher with the use of sexually violent pornography than with the use of nonviolent pornography, although the latter relationship was also found to be significant. The study resolves what appeared to be a troubling discordance in the literature on pornography and aggressive attitudes by showing that the conclusions from nonexperimental studies in the area are in fact fully consistent with those of their counterpart experimental studies. This finding has important implications for the overall literature on pornography and aggression. Aggr. Behav. 36:14–20, 2010. © 2009 Wiley-Liss, Inc.

INTRODUCTION

In a meta-analysis conducted by Allen et al. [1995b] the investigators failed to find a significant association between attitudes supporting violence against women and pornography consumption in nonexperimental studies. This result is both at odds with results emerging from experimental studies and the overall literature in the area including other meta-analyses by Allen and associates. Here a consistent significant association between pornography and various dependent measures including both attitudes supporting violence against women and actual aggressive behavior has been found [Allen et al., 1995a,b, 2000].

For many researchers, the incongruity between the results emerging from experimental vs. nonexperimental studies concerning the association between attitudes supporting violence against women and pornography has understandably raised doubts about the ability of generalizing the conclusions emanating from experimental studies to "real world" settings [e.g., Lo and Ran, 2005; Seto et al., 2001]. In addition, if such doubts are well founded, they also constitute a major challenge to models positing that attitudes supporting violence against women are one of the interacting pathways mediating and moderating behavioral effects of pornography, e.g., The Confluence Model of Sexual Aggression [Malamuth et al., 1995].

However, as elaborated upon below, serious doubts may be raised about the accuracy of the conclusions reached by Allen et al. [1995b] in their meta-analysis of the relationship between attitudes supporting violence against women and pornography in nonexperimental studies. On this basis, we conduct a new and up-to-date meta-analysis that corrects for problems and questionable decisions in the Allen et al. [1995b] meta-analysis. In addition, we examine the potential relationship between attitudes supporting violence against women and content of pornography across included studies as violent forms of pornography have been reported to

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be more clearly associated with risk factors pertaining to sexual aggression than nonviolent forms [e.g. Boeringer, 1994].

Definitions

The widely accepted conceptualization of "attitudes" usually incorporates three components including affective responses, cognitive evaluations, and behavioral predispositions toward an entity [e.g., Breckler, 1984]. When applying this approach to defining "attitudes supporting violence against women" and deciding which studies should be included within a meta-analysis of this area, we included various scales assessing (a) affective responses to acts such as rape, other types of sexual aggression, and partner violence, (b) evaluative cognitions, and (c) behavioral predispositions or attractions toward such aggressive acts [e.g., Malamuth, 1981, 1989a,b]. Thus, we follow the lead of Allen et al. [1995b] although these investigators used the term "rape myth acceptance" rather than "attitudes supporting violence against women." We believe that this latter term better describes the conceptual territory encompassed by the various scales included.

The term "pornography" refers to sexually explicit materials intended to create sexual arousal in the consumer. Nonviolent pornography is defined as sexually explicit materials without any overt coercive content, but which may sometimes imply acts of submission and/or coercion by the positioning of the models, use of props or display of unequal power relationships. Violent pornography is defined as sexually explicit materials in which nonconsensual, coercive, and/or violent sexual relations are explicitly portrayed [see also Senn and Radtke, 1990].

The Basis for Predicting Associations

The basis for predicting associations between exposure to violent pornography and aggressive tendencies, including attitudes supporting violence against women, may be viewed as in keeping with more general models of the impact of violent media on aggressive tendencies [e.g., Anderson and Carnagey, 2004; Huesmann and Kirwil, 2007], although additional mechanisms may also be at play when images of sex and aggression are intermingled [e.g., Anderson and Anderson, 2008; Donnerstein and Hallam, 1978].

The proposed processes responsible for predicting an association between nonviolent pornography and aggressive responses, including attitudes supporting violence against women, rely on the fact that nonviolent pornography often portrays women as highly sexually promiscuous and frequently as being dominated and "used" by males. These images may prime and reinforce various sexually aggressive schemata and "rape myth" attitudes, e.g., that some women deserve to or enjoy being harassed, maltreated sexually, or raped [Berkel et al., 2004; Lonsway and Fitzgerald, 1995; Milburn et al., 2000]. The proposed associations may not occur for most men, but be particularly likely for men who hold hostile/power schemas associated with women and sexuality and/or adhere to attitudes that dichotomize women into "whores" vs. "madonnas" [see also Bargh et al., 1995; Edelman, 2009; Kingston et al., 2008; McKenzie-Mohr and Zanna, 1990; Vega and Malamuth, 2007; Zurbriggen, 2000].

METHOD

Problems in the Allen et al. [1995b] Meta-analysis

First, in our opinion, half of the eight studies included in the meta-analysis of Allen et al. [1995b] should not have been included due to lack of fit in concept definitions, sampling procedures, subject samples, and/or the assessment instruments used. These four studies include: Burt [1980], Mosher [1988], and Padgett et al. [1989, two studies]. For illustration purposes we will discuss only one example here namely Burt [1980]. However, a more detailed description of the reasons why the above studies were excluded may be obtained from the first author. In the study by Burt [1980], there is a clear error in what type of media was classified as "sexually explicit media" or "pornography." The media assessed by Burt actually consisted of "exposure to media treatments of sexual assault," defined as "television, motion picture, dramatic, and newspaper treatments of rape or sexual assault" (p 221). Such media typically document the horrors of rape, rather than show sexually explicit images designed to sexually arouse the consumer (i.e. pornography). Importantly, the same theoretical models (e.g., social learning theory) that would predict a positive association between pornography use and attitudes supporting violence against women would in fact predict the opposite, i.e. a negative association, for this type of documentary media. For this reason we believe that Burt [1980] should not have been included in the meta-analysis.

Second, in the Allen et al. [1995b] study, we found a mistake in the statistical analyses concerning the likely presence of a moderating variable.[1] This error was graciously acknowledged by Dr. M. Allen (personal communication, November 25, 2005). Meta-analyses commonly present a statistical test of heterogeneity in an attempt to establish whether all studies are evaluating the same effect [Higgins et al., 2003; Hunter et al., 1982; Leandro, 2005]. A failed test of heterogeneity as given by a significant χ^2 indicates the likely presence of a moderating variable. A nonsignificant χ^2 indicates the likely absence of a moderating variable and hence homogeneity across included studies. Allen, Emmers et al. erroneously reported that "after deleting the Check [1985, Experiment 2] and Malamuth and Check [1985, Nonexperimental] studies, the new average correlation was homogeneous and that the sample probably did not contain a moderating variable" (p 18). However, our reanalysis showed that the new average correlation in fact was heterogeneous, indicating the likely presence of a moderating variable ($\chi^2_{(5)} = 14.23$, $P = .0142$, $I^2 = 65\%$ using Cochran's Q and Higgin's I^2). This calls for a more cautious or even different interpretation of the results and following conclusions of this particular part of the Allen, Emmers et al. meta-analysis.

The Present Meta-Analysis

Procedure. We used two methods for collecting studies. First, we examined previous meta-analyses and reviews on pornography for relevant studies [in particular Allen et al, 1995a,b; Bauserman, 1996; Fisher and Grenier, 1994; Malamuth et al., 2000; Oddone-Paolucci et al., 2000]. Second, we conducted a thorough literature search of the following databases: PsychInfo, PsycArticles, PubMed, and Sociological Abstracts using erotica*, porn*, sexual media*, rape*, and violence* as key words searching the databases from inception to February 2009. This resulted in a large number of references. We then reviewed each reference carefully according to the following four inclusion criteria:

1. The definition of pornography matched or approximated our own. That is, "sexually explicit materials intended to create sexual arousal in the receiver."
2. The study included a measure of attitudes supporting violence against women.
3. The study included enough statistical information on male participants to estimate the association between pornography consumption and attitudes supporting violence against women.
4. The study used nonoffender samples.

The first three criteria match closely those used by Allen et al. [1995b] in their meta-analysis. However, Allen, Emmers et al. included in some studies the data for both female and male participants. As research has consistently shown gender to be a strong differentiating variable in this area of research [e.g., Bryant, 2009; Hald, 2006; Hald and Malamuth, 2008] we elected not to do so, with one exception. In the Emmers-Sommer and Burns [2005] study ten women (2.4%) was included in the calculation of results. We thought it unlikely that such a small percentage would have much overall impact and decided to include the study. The fourth criterion does not explicitly replicate Allen, Emmers et al., although Allen, Emmers et al. also did not include studies using offender populations. Our rationale for excluding studies using offender samples pertain to the fact that various researchers have raised questions about the veridicality and validity of self-reports of convicted offenders as compared with nonoffender samples [e.g., Hanson and Bussiere, 1998; Hare, 1985].

A total of nine studies and 2,309 participants were included in the final meta-analysis (Table I) [Barak et al., 1999; Demaré et al., 1993]. We acknowledge that the inclusion of only nine studies in the final meta-analysis may call for a more cautious interpretation of results.

Measures. The following measures of attitudes supporting violence against women were used in the studies included in the meta-analysis:

The acceptance of interpersonal violence scale (AIV—6 items): The AIV assess attitudes condoning the use of force and violence in relationships. The internal reliability of the AIV is .59 as measured by Cronbach's α [Burt, 1980].

The adversarial sexual beliefs scale (ASB—9 items): The ASB investigates the degree to which participants perceive male and female relations as "fundamentally exploitative" [Burt, 1980]. The

[1]Depending on the particular focus of the study, individual differences such as attraction to sexual aggression or attitudes supporting violence against women may be treated as a mediator, a moderator or an outcome variable. Mediators reflect the generative mechanisms or processes through which the identified variable influences the outcome. That is, how an effect came about. In contrast, a moderator is a third variable that affects the direction and/or the strength of a relationship between two variables. In statistical analyses this is revealed as an interaction effect and in meta-analyses as a failed test of heterogeneity.

TABLE I. Studies Included in (1) The Meta-Analysis and (2) The Sensitivity Analyses

Study/Author	Year	Attitudes supporting violence against women scales used	*N*	Correlation[a]
1. Meta-analysis				
Barak, Fisher, Belfry, and Lashambe	1999	LSH, RMA	31	.310
Boeringer	1994	LF, LR	477	.283
Check	1985	AIV, ASB, LF, LR, RMA	434	.111
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.142
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.090
Garcia	1986	ATR	115	.045
Lam and Chan	2007	PSH, SHP	227	.208
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
2A. Sensitivity analysis I: Nonviolent pornography				
Boeringer	1994	LF, LR	477	.205
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.084
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.030
Garcia	1986	ATR	115	.012
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
2B. Sensitivity analysis II: Violent pornography				
Boeringer	1994	LF, LR	477	.361
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.171
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.210
Garcia	1986	ATR	115	.070

Note: Attitudes supporting violence against women scales used: AIV = Acceptance of Interpersonal Violence, ASB = Adversarial Sexual Beliefs, ATR = Attitudes Toward Rape, LF = Likelihood of Force, LR = Likelihood of Rape, LSH = Likelihood of Sexual Harassment, PSH = The Perception of Sexual Harassment Scale, RMA = Rape Myth Acceptance, SHP = The Sexual Harassment Proclivities Scale.
[a]If an overall *r* was not provided, an overall average *r* was calculated on the basis of the *r*-values of each relevant scale included as suggested by Lipsey and Wilson [2001].

internal reliability of the ASB is .80 as measured by Cronbach's α [Burt, 1980].

The rape myth acceptance scale (RMA—11 items): The RMA measures the degree to which participants believe in stereotypical rape myths. The internal reliability of the RMAS is .88 as measured by Cronbach's alpha [Burt, 1980].

The attitudes toward rape scale (ATR—15, 25, or 55 items): The ATR includes eight factors. High scores on these factors reflect various aspects contributing to a general belief in rape myths, e.g., that women cause rape through their appearance and/or behavior [Field, 1978; Garcia, 1986]. The reliability of the ATR ranges between .81 and .93 as measured by Cronbach's α [Daugherty and Dambrot, 1986].

The likelihood of rape scale (LR), *the likelihood of sexual force* (LSF), and *the likelihood of sexual harassment* (LSH) *scale*: The LR, LSF, and LSH are single item scales used to measure the hypothetical potential of a man to rape or commit similar sexual aggressive acts given the assurance that he would face no punishment [Malamuth, 1981]. Scores on these scales have been shown to have considerable construct and predictive validity and to correlate highly with a much more elaborate measure of attraction to sexual aggression [e.g., Malamuth, 1989a,b; Malamuth and Dean, 1991].

The perception of sexual harassment scale (PSH–9 items): The PSH examines perceptions of sexual harassment [Biber et al., 2002]. The reliability of the PSH is .72 as reported by Lam and Chan [2007] and measured by Cronbach's α.

The Sexual Harassment Proclivities Scale (SHP–10 items): The SHP assess participants' proclivity to engage in sexual harassment [Pryor, 1987]. The reliability of the PSH (5 items) is .83 as reported by Lam and Chan [2007] and measured by Cronbach's α.

All included measures used Likert scales where higher scores indicate a higher degree of attitudes supporting violence against women.

RESULTS

Owing to the findings of heterogeneity in the analyses reported below all analyses were conducted using both a fixed effect model and a random effect model and then compared. As the results of all

analyses using either model were very similar, only the result using the fixed effect model is reported here with the result using the random effect model being available from the first author [see also Higgins and Thompson, 2002; Leandro, 2005; Song et al., 2001].

The overall meta-analysis included nine studies and 2,309 participants. The average correlation between pornography consumption and attitudes supporting violence against women using a fixed effect model was significant ($r = .18$, $P < .001$; CI 95% (.14; .22)). However, a failed test of heterogeneity and inconsistency across studies was found indicating the likely presence of a moderating variable ($\chi^2_{(8)} = 18.21$, $P < .001$, $I^2 = 56\%$, using Cochran's Q and Higgin's I^2).

Both theory and the experimental research literature suggest that violent pornography is more likely to have association with attitudes supporting violence against women than nonviolent pornography [e.g., Allen et al., 1995b]. Consequently, two sensitivity analyses based on type of pornography were conducted. Only studies providing the necessary differentiation of statistical information were included.

Across six studies and 1,617 participants, the average correlation between nonviolent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ($r = .13$, $P < .001$). However, a failed test of heterogeneity and inconsistency across studies was found ($\chi^2_{(5)} = 16.42$, $P = .006$, $I^2 = 70\%$, using Cochran's Q and Higgin's I^2) indicating the likely presence of a moderating variable.

Across four studies and 1,394 participants the average correlation between violent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ($r = .24$, $P < .001$). However, a failed test of heterogeneity and inconsistency across studies was found ($\chi^2_{(3)} = 14.22$, $P = .003$, $I^2 = 79\%$, using Cochran's Q and Higgin's I^2) indicating the likely presence of a moderating variable.

Using Fisher's Z transformation to compare the within-group correlations between violent and nonviolent pornography and attitudes supporting violence against women, it was found that the correlation between violent pornography and attitudes supporting violence against women ($r = .24$) was significantly higher ($P < .001$) than the correlation between nonviolent pornography and attitudes supporting violence against women ($r = .13$).

DISCUSSION

The result of the present meta-analysis shows a significant overall relationship between pornography consumption and attitudes supporting violence against women in *nonexperimental* studies. This relationship was found to be significantly stronger for violent pornography than for nonviolent pornography, although both types of pornography showed significant positive associations with attitudes supporting violence against women. The finding of heterogeneity in the meta-analysis underlines the importance of targeting moderators in pornography research [see also Kingston et al., 2009].

The results are in contrast to earlier conclusions reported by Allen et al. [1995b] both concerning the existence of an overall significant relationship between pornography consumption and attitudes supporting violence against women in *nonexperimental* studies and the finding of heterogeneity indicative of moderators in this relationship. Further, our reanalysis of the meta-analysis as originally reported by Allen, Emmers et al. showed that even in their originally reported meta-analysis heterogeneity indicative of moderators was found despite their reporting of the contrary.

Two important implications may be drawn from this study. First, the results correct a glaring discrepancy in the research literature by showing that the relationship between men's pornography consumption and their attitudes supporting violence against women in nonexperimental studies are in fact fully consistent with those previously found in experimental studies focusing on the same association.

Second, the results highlight the role of individual differences as strong moderators of the association between pornography and attitudes supporting violence against women. Such moderation has now also been well documented in this research area with other dependent measures [e.g., Bryant, 2009; Kingston et al., 2008, 2009; Malamuth and Huppin, 2005; Vega and Malamuth, 2007]. More specifically, it has been consistently found that an association between pornography consumption and aggression is particularly likely for men who score high on other risk factors for sexual aggression.

Does a consistent significant, but relatively small association between pornography consumption and attitudes supporting violence against women in nonexperimental studies have practical significance? We believe it does. As shown by e.g., Rosenthal [1986] even small significant associations may translate into considerable social and practical significance across larger population samples. In addition, the type of attitudes studied here have been found to consistently predict "real world" sexually aggressive proclivities and behaviors in

both cross-sectional and longitudinal research [e.g., Hall et al., 2006; Malamuth et al., 1995; Meyer, 2000; Voller et al., 2009]. Finally, as has been well documented in the area of sexual aggression research virtually all risk factors have only relatively small associations with the dependent variables of interest. However, it is the confluence or interactive combination of these variables that can have strong predictive utility and thus social and practical significance [e.g., Malamuth, 1986; Malamuth et al., 1995, 2000; Vega and Malamuth, 2007].

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Client:	**Steven Avery**	**Court Case No:**	**05-CF-381**
Report Date:	**November 30, 2005**	**SPD File No:**	**05S-36-I-V01166**
Investigator:	**Kitty Scherer**	**Investigation No:**	**05-IM-122**
Attorney:	**Erik Loy & Craig Johnson**	**Investigation Date:**	**November 23, 2005**
Name:	**Bobby Dassey**	**Phone Number:**	**920-973-1740**
Address:	**12930A Avery Road Two Rivers, WI 54241**		

INVESTIGATION REPORT

On November 23, 2005, at approximately 12:40 p.m., I, Kitty Scherer, conducted a personal interview with Bobby Dassey. Attorney Erik Loy was also present during the interview. After identifying myself by name, title and agency, showing my photo identification card and giving Bobby my business card, I explained that I worked for the attorney representing his uncle, Steven Avery in regard to charges stemming from the death of Teresa Halbach.

I told Bobby I wanted to ask him some specific questions about October 31, but first I wanted to ask him about any headlights that he may have seen or investigated on the property. Bobby stated that Chuckie had just left headed up north. Chuckie called Steve to check on some headlights that he had seen on his property as he was leaving. When the phone call came in, Steve was at the Dassey home. Steve and Bobby got in the truck and drove around to see if they could find the lights near Chuckie's house. There was nothing there – they didn't see headlights nor did they see any type of tail lights. Bobby and Steve came back to Bobby's house. Steve called Chuckie and told him they didn't see anything.

I asked Bobby if he could tell me what he did on October 31, 2005. Bobby stated he works third shift and he got home about 6:30 a.m. Bobby went to bed and slept until about 2:30 p.m. When he woke up he did see a vehicle parked out in front of their house, near the tree. The girl, Teresa, was taking photos of the van that was for sale. Bobby jumped in the shower. When Bobby got out he looked outside and saw Steve walking toward Steve's trailer. Bobby grabbed his bow case and left. Bobby thought he left the house about 3:00 p.m. Bobby said that the girl's vehicle was still parked out in front as he drove off down the road.

I asked Bobby if he knew that somebody was coming to photograph the van and he stated that he knew that she was coming that day, the van was ready for photos and it was not unusual for Steve to be selling cars or for Auto Trader to come and take pictures.

Bobby stated he got home from hunting about 4:45 p.m. and the girl's vehicle was gone. Bobby had gone into the house, watched t.v., and went to bed somewhere between 6:30 p.m. and 7:00 p.m. Bobby got up about 9:30 p.m. and left for work. Bobby works at Fischer-Hamilton at starts work at 10:00 P.M.

Bobby stated he heard Steve say on the news media that the girl had been at the house before. Bobby stated that he has never seen that girl at their house taking photos prior to that day.

Erik then asked Bobby if he remembers seeing a fire on Monday, the 31st. Bobby stated he did not recall seeing a fire on Halloween. Bobby thought the fire was on Tuesday or Wednesday.

I asked if he has spoken to law enforcement regarding this matter and he stated he has, Bobby talked to law enforcement two times. The first time, was on Saturday, November 5, 2005. Bobby stated he didn't know anything that was going on. Bobby left his house to go goose hunting about 9:00 a.m. and everything was fine at the house. Bobby came back about 5:30 p.m. or 6:00 p.m. to get his dog, which was in the kennel inside the house, and found the road was blocked off at Jambo Creek Road. Bobby told the officers that he wanted to get to his house to get his dog. After identifying himself, the officers wanted to speak with him. Bobby sat in the front seat of an unmarked squad car answering questions. Bobby said the officers were nice to him and just kept asking him questions, the same questions. Bobby thought it took him three and half hours to get his dog. As he was sitting in the car, answering questions another officer went to the house, picked up his puppy, and brought him back to where they were parked on Jambo Creek Road. Bobby was not allowed to go on the property. Bobby stated they pretty much asked him the same questions and wanted to know what he knew about the incident. Bobby said he didn't know much other than what he had seen on television.

A couple of days later, Bobby had to go to the hospital for DNA testing. Bobby arrived at the hospital about 2:30 p.m. and didn't get home until about 5:00 p.m. as the officers, again, questioned him. The DNA testing only took about forty-five minutes. The officers asked him more questions and they wanted Bobby to tell them more details about the area. They again asked Bobby questions about the fire. Bobby still thought he had seen the fire either on Tuesday or Wednesday, not on Monday.

Bobby also said law enforcement has talked to his friend, Mike Osmondson. I asked Bobby why they spoke to Mike. Bobby said it was because Mike had been on the property on the previous Thursday. I asked how the officers knew that Mike had been on the property. Bobby was told that due to the helicopters that were flying above the area, they had the car on videotape that he was at the house, so they questioned him.

I asked Bobby if there was anything else he wanted to tell us and he stated no, that was all. I thanked Bobby for his time.