

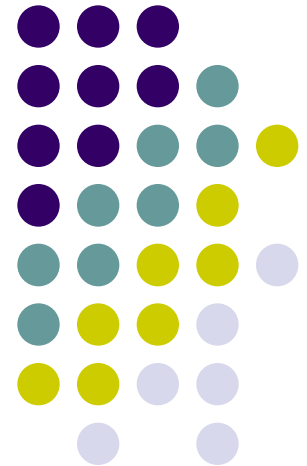
# Effects of Condom Wrapper Graphics and Scent on Condom Use in the Botswana Defence Force

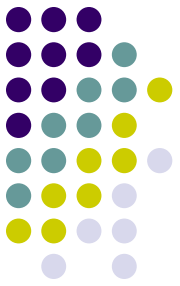


Department of Defense HIV/AIDS Prevention Program

Bonnie Tran, PhD

20 July 2012

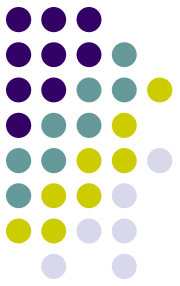




# Background

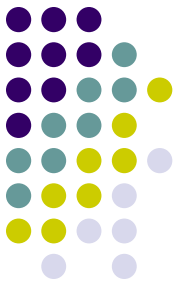
- Correct and consistent condom use is highly effective in preventing HIV infection
- Condom use among military personnel is generally inconsistent
- Military personnel at higher HIV risk

# Rationale and Objective



- Rationale
  - HIV prevalence in Botswana (17.6%) is high
  - Botswana Defence Force (BDF) provides free condoms
  - Government-issued condoms (Lorato/Carex) often not used due to unpleasant scent and unattractive wrapper
  - Formative work
    - Scented condoms highly preferred
    - Camouflaged wrapper was appealing
- Objective
  - Determine if condom-wrapper graphics and scent improved condom use in BDF


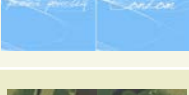


# Study Design



- Non-randomized intervention study conducted from Oct 2010 to Apr 2011
  - Pre-intervention condom: those typically used by participant
  - Intervention condom: scented/unscented, packaged in 2 wrappers

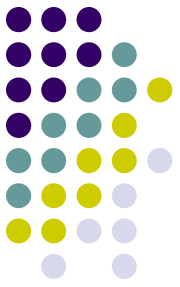


- 4 BDF sites selected

Base	Location	Intervention	Scent
1	South		Unscented
2	South		Scented
3	North		Unscented
4	North		Scented



# Study Procedures



Baseline  
survey

Training  
session

Intervention  
condoms  
distributed

Wrap-up

Diary 1

Diary 2

Diary 3

Diary 4

Day -14

Day -7

Day 0

Day 7

Day 14

Day 21

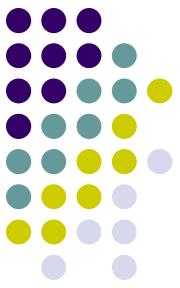
Day 28

Pre-Intervention Period

2 weeks

Post-Intervention Period

# Study Procedures



**Baseline survey**

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# Baseline Survey

- Demographics
- Sexual behavior history
- HIV risk perception
- HIV transmission knowledge
- Alcohol use
- Circumcision status
- Condom use frequency, attitudes, & behaviors



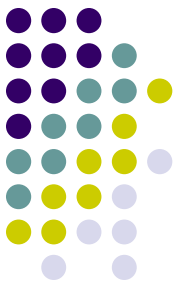




# Sexual Behavior Diary

- Measured sexual activity and condom use
- Completed on daily basis
  - Up to 3 sexual occasions
  - Type of sexual partner (spouse, regular cohabitating, regular non-cohabitating, casual)
  - Condom used (yes/no) and reasons why
- Participants instructed to not modify their sexual behaviors while participating in study

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Establish pre-intervention condom use

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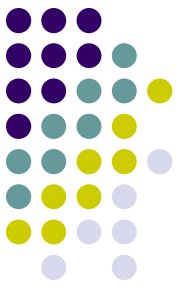
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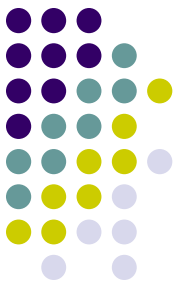
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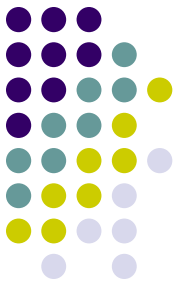
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Pre-Intervention Period

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Post-Intervention Period

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Pre-Intervention Period

2 weeks

Post-Intervention Period

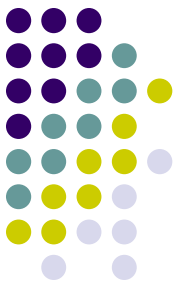


# Data Analyses

- Analyses conducted using data from 4 diaries
- Based on 155 sexually active participants completed both pre- and post-intervention diaries
  - Diaries 1 & 2 established pre-intervention condom use
  - Diaries 3 & 4 established post-intervention condom use

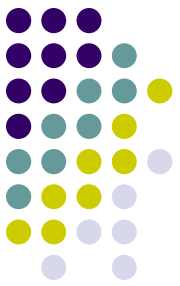
$$\text{Condom use rate (CUR)} = \frac{\text{frequency of protected sex}}{\text{total frequency of sex}}$$

- Calculated CUR over a two week period each for pre- and post-intervention periods



# Statistical Analyses

Goal	Statistical Plan
Overall intervention effect, accounting for paired data	Wilcoxon signed-rank test Mixed-effects logistic regressions (MELR)
Effect of wrapper and scent on CURs, accounting for correlated data	MELR <ul style="list-style-type: none"><li>• Wrapper effect: Wrapper*time interaction</li><li>• Scent effect: Scent treated as time varying covariate</li></ul>

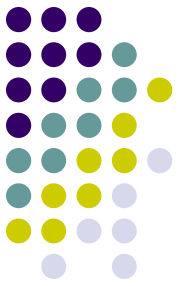


# Demographics

	n	(%)
Age in years, Mean (SD)	25.1	(2.4)
Marital status		
Single	173	(82.0)
Married/Cohabiting	38	(18.0)
Education		
Junior (secondary)	1	(0.4)
Senior (secondary)	157	(74.4)
Tertiary	44	(20.9)
Vocational	9	(4.3)
Religion		
Christian	174	(82.5)
Traditional	10	(4.7)
African Traditional	7	(3.3)
No religious affiliation	19	(9.0)
Other non-Christian	1	(0.5)

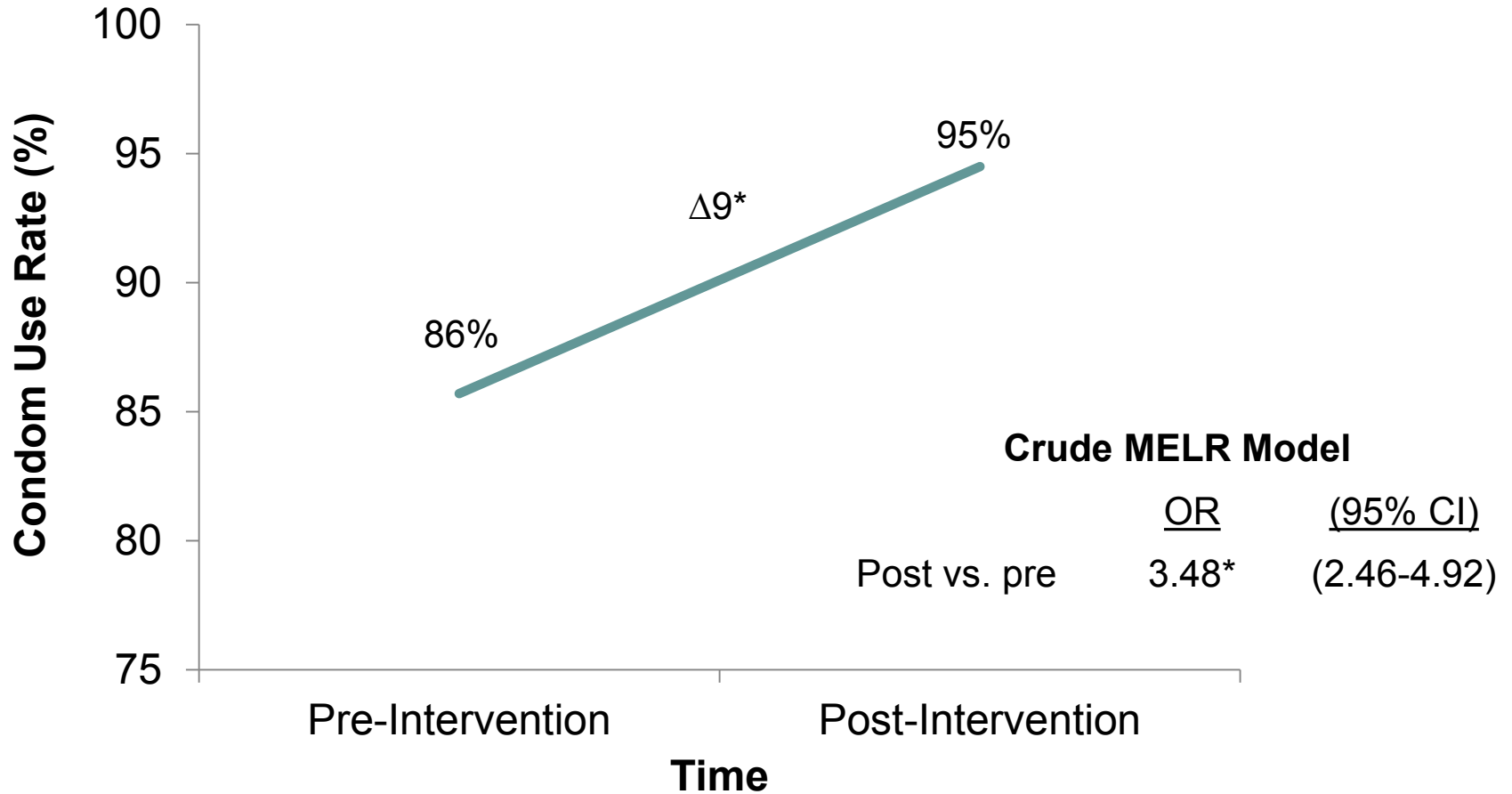
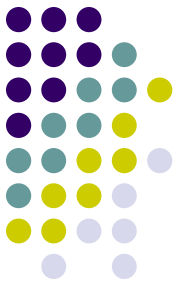


# Baseline Differences Between Wrapper Groups

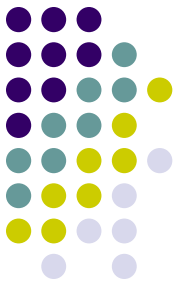


- Blue wrapper group more likely to be
  - Single, never married
  - Educated (completed tertiary school or higher)

# Overall Intervention Effect



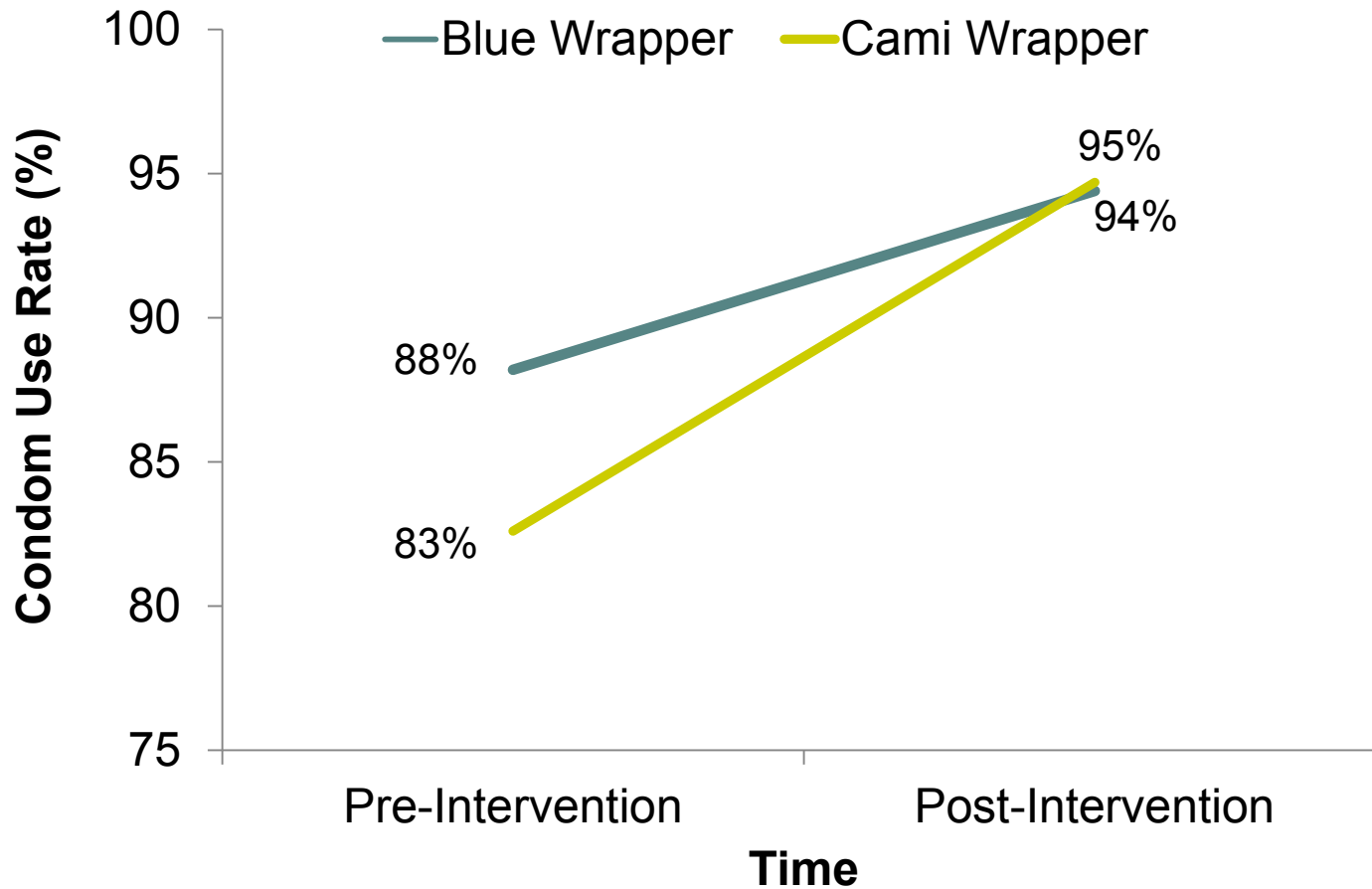
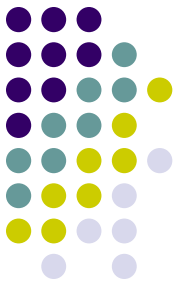
\* $p < 0.001$



# Overall Intervention Effect

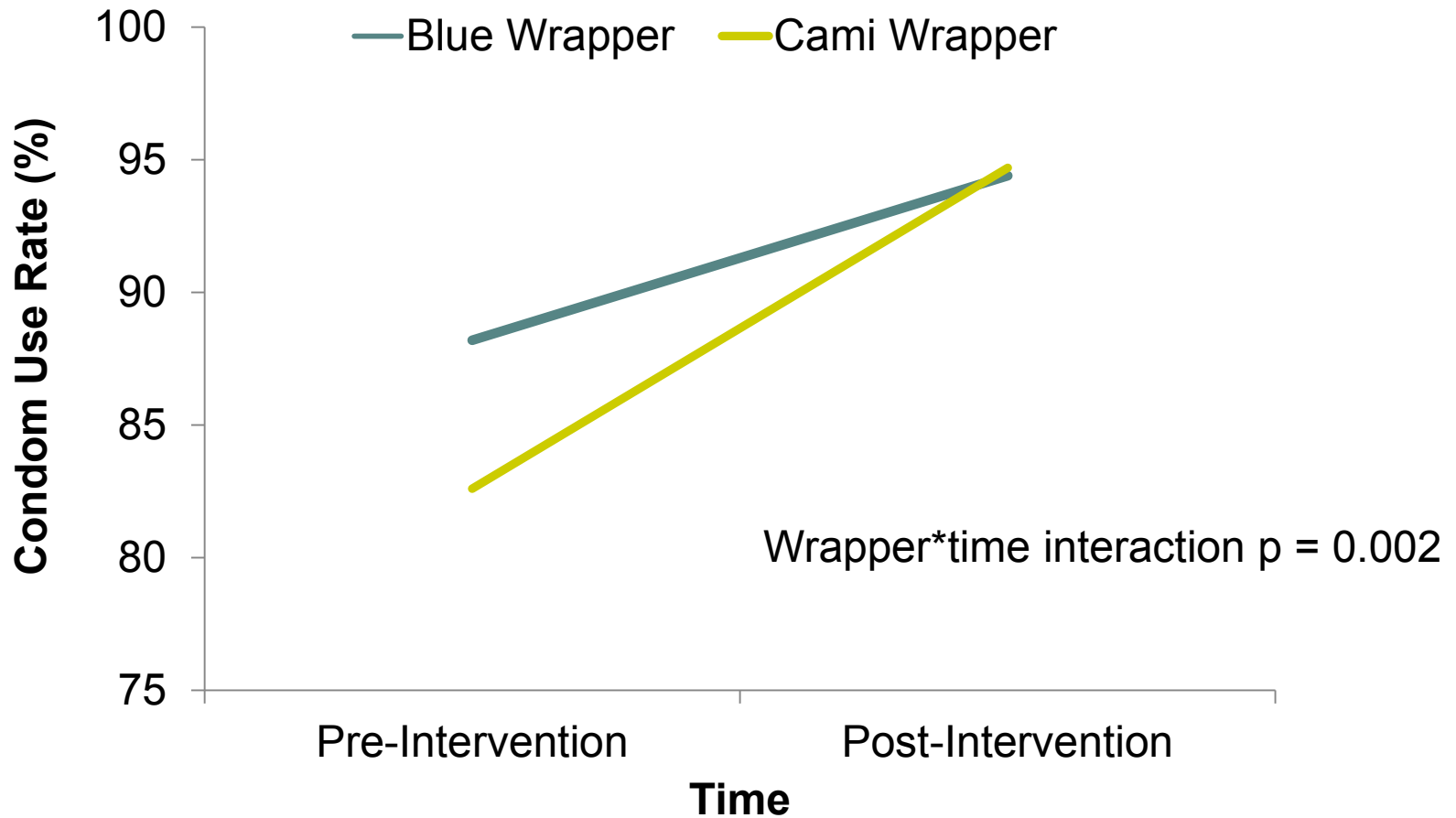
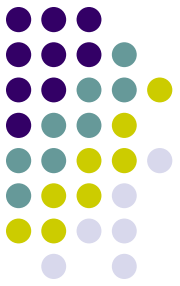
- What could explain increase in condom use over time in study population?
  - Used intervention condoms highly preferred by BDF
  - Handed out condoms to participants in person, which could have promoted condom awareness and encouraged use

# Condom Use Rates Over Time by Wrapper

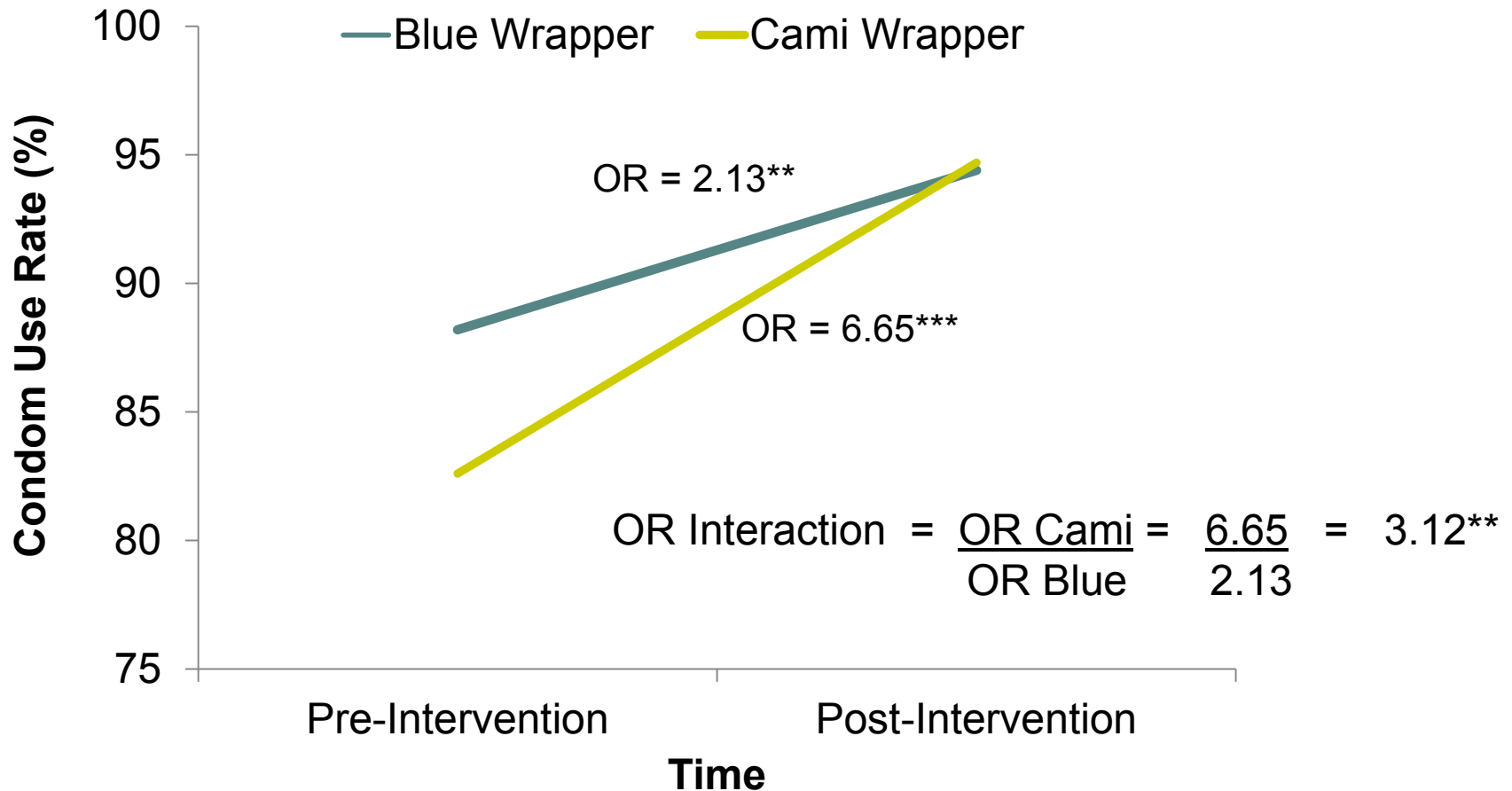
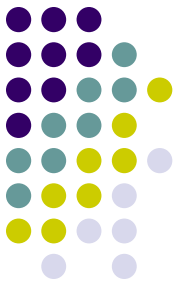


$p = 0.27$

# Differential Change in Condom Use Rates Over Time by Wrapper

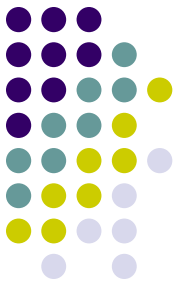


# Wrapper Effect – Crude MELR Model



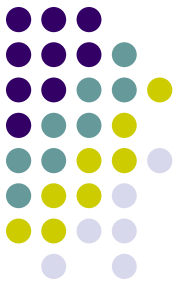
\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001

# Wrapper Effect



- Why did camouflage wrapper have larger effect on condom use?
  - Cami pattern is linked to military environment and unique to BDF military

# Condom Scent Effect – Crude MELR Model

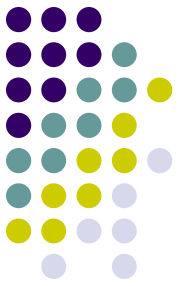


	Unadjusted Model	
	OR	95% CI
Reported scented condoms	2.40***	(1.57-3.66)

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001



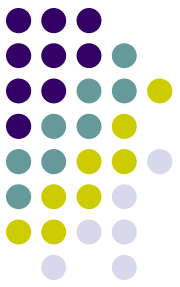
# Final MELR Model – Effect of Scent and Wrapper



	Adjusted Model†	
	OR	95% CI
Reported scented condoms	2.28**	(1.40-3.71)
Camouflage wrapper Post vs. pre	6.41***	(3.62-11.34)
Blue wrapper Post vs. pre	1.98**	(1.25-3.13)
Wrapper*time interaction	3.24**	(1.56-6.76)

†Results of mixed effects logistic regression analysis, adjusting for baseline differences (marital status, education, military unit, sexual partner types, baseline condom brand), and other variables in model

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001



# Limitations & Strengths

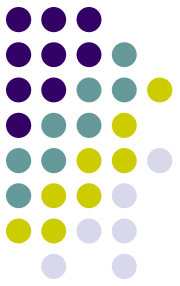
## Limitations

- Intervention not randomized
- Lack of control group
- 2-week diaries not long enough to capture average behaviors
- Short follow-up time to examine intervention effect

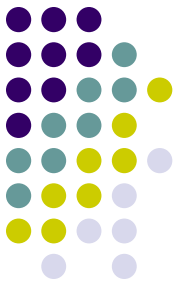
## Strengths

- High participation rate
- Innovative and novel intervention

# Summary



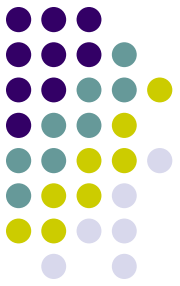
- Condom use rates higher among those who received condoms packaged in camouflage wrappers
- Condom use rates also higher among those who reported using scented condoms



# Take Home Message

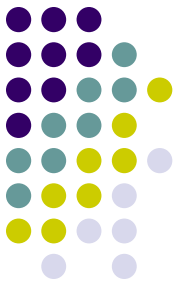
- Other militaries and organizations providing free condoms should consider conducting social marketing research in target population regarding which condoms to distribute

# Acknowledgments



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  - Lt. Zibanani Elias
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  - David Kelapile

# Disclaimer



- The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government. Human subjects participated in this study after giving their free and informed consent. This research has been conducted in compliance with all applicable Federal Regulations governing the Protection of Human Subjects in Research.