



National and Kapodistrian  
UNIVERSITY OF ATHENS

INTERNET ADDICTION AMONG GREEK ADOLESCENTS.  
PREDICTION FROM FLOW OF INTERNET ACTIVITY AND  
IMPULSIVE COMPULSIVE BEHAVIOR

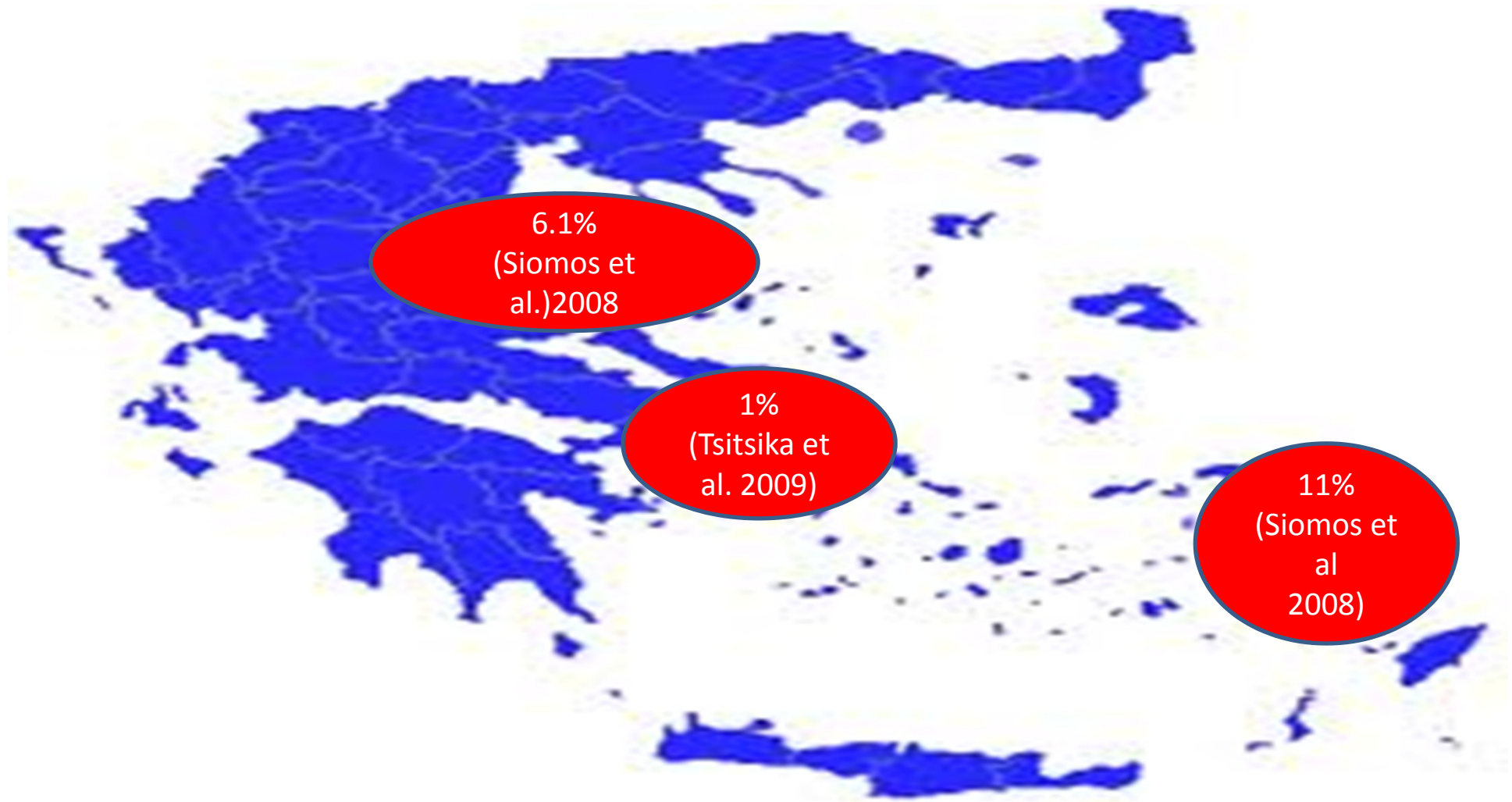
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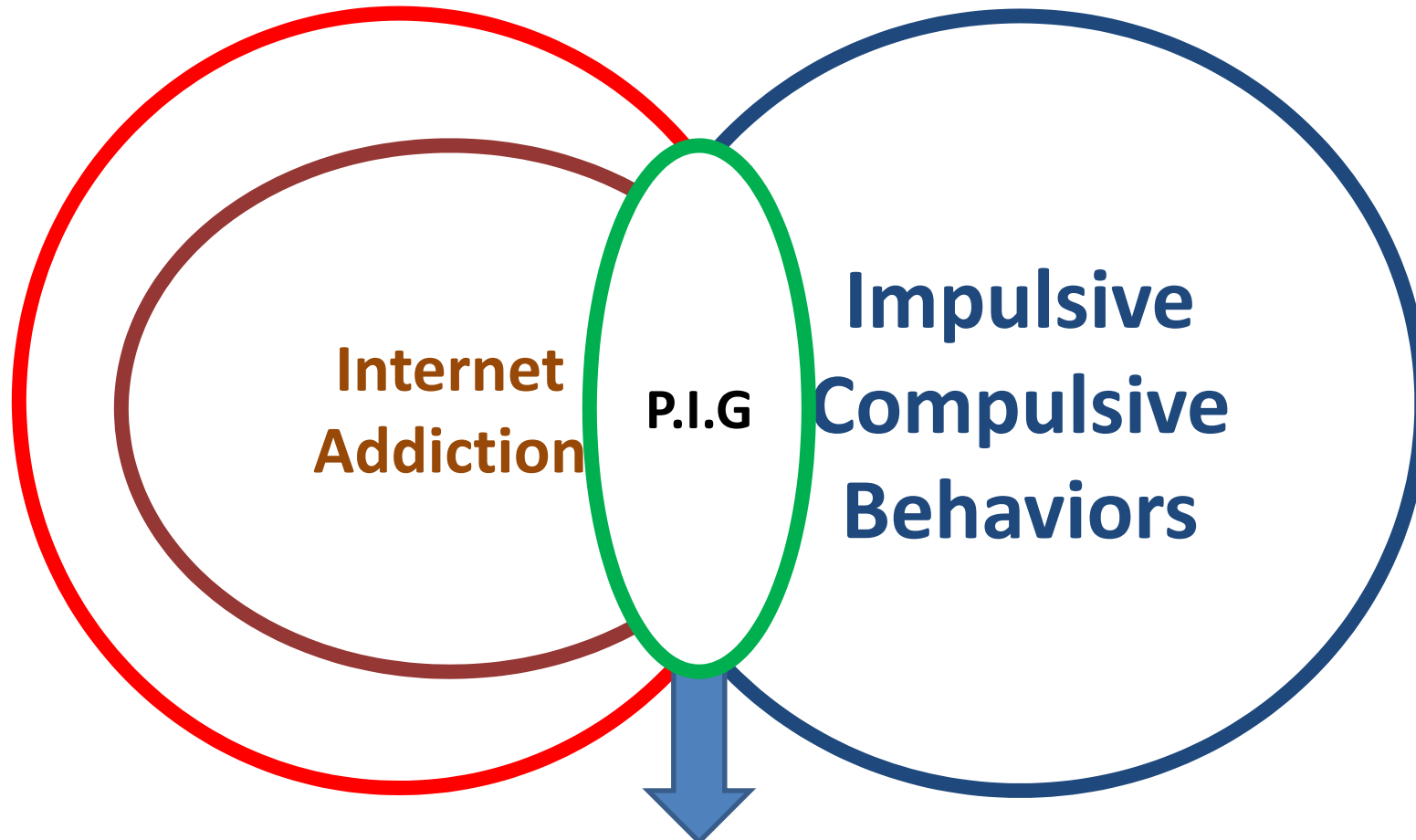
This research has been co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program: Heracleitus II. Investing in knowledge society through the European Social Fund.

# Impetus for this research project

- Contradictory findings regarding the prevalence of internet addiction among Greek adolescents



# Impulsive- Compulsive Behaviors and Internet Addiction



Positive Immediate Gratification Phenomenon  
(Marlatt & Gordon, 1985)

## Internet Flow and Internet Addiction (Chen, 2006)

- An individual who abuses the Internet must be absorbed by his Online Activity (Chen, 2006)

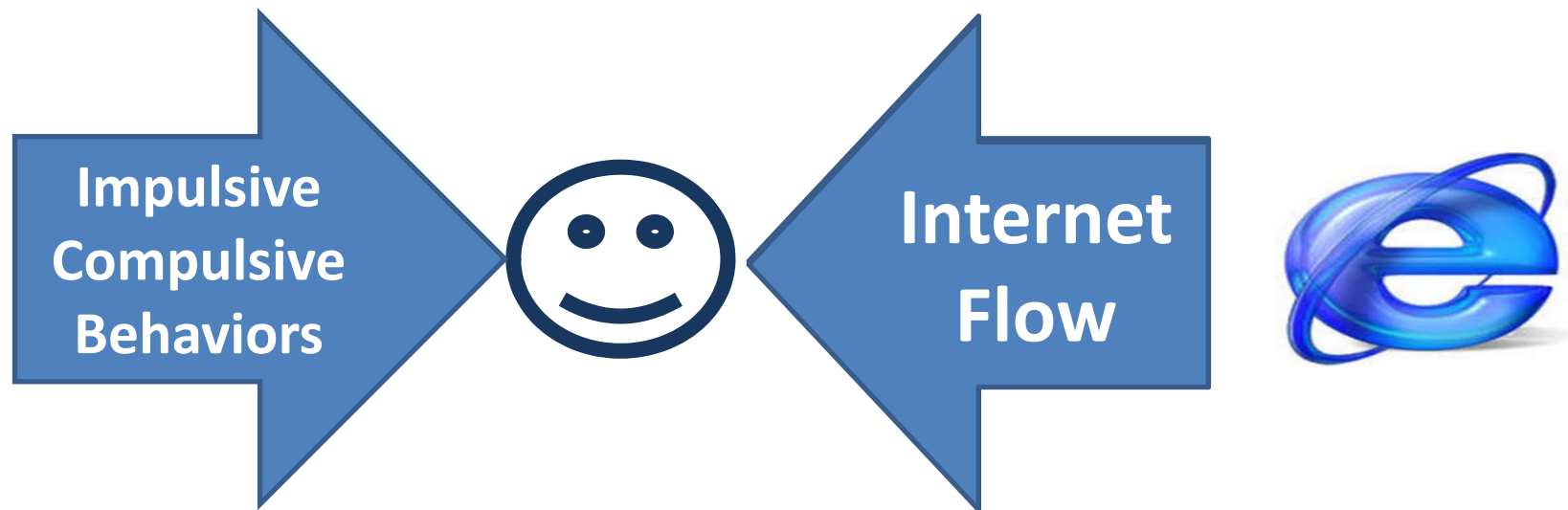


- As Flow defines the level the user is absorbed in the online activity (Chen, 2006), achieved through a **P**ositive **I**mmEDIATE **G**ratification mechanism



- *The user must be in a state of Flow (Weibel et al, 2008)*

# Model of Understanding Internet Addiction (Douglas et al, 2008)



Consequently In the present study as Predictors of Internet Addiction were examined:

- **Impulsive Compulsive Behaviors**
- **Internet Flow**



# Research Questions

1. What is the prevalence of Internet Addiction among Greek high school students?
2. Do Impulsive Compulsive behaviors and Internet Flow predict Internet Addiction?
3. Does impulsive compulsive behavior mediate the relationship between Flow of internet activity and levels of Internet Addiction ?



# Research Sample

- N= 2090 Adolescents
- Boys=1035 (49,7%)
- Girls=1048 (50,3%)
- Attica= 1919 (91,8%)
- Korinthia= 171 (8,2%)
- General High Schools= 1728 (82,7 %)
- Technical High Schools=362 (17,3 %)
- Mean Age= 16,16



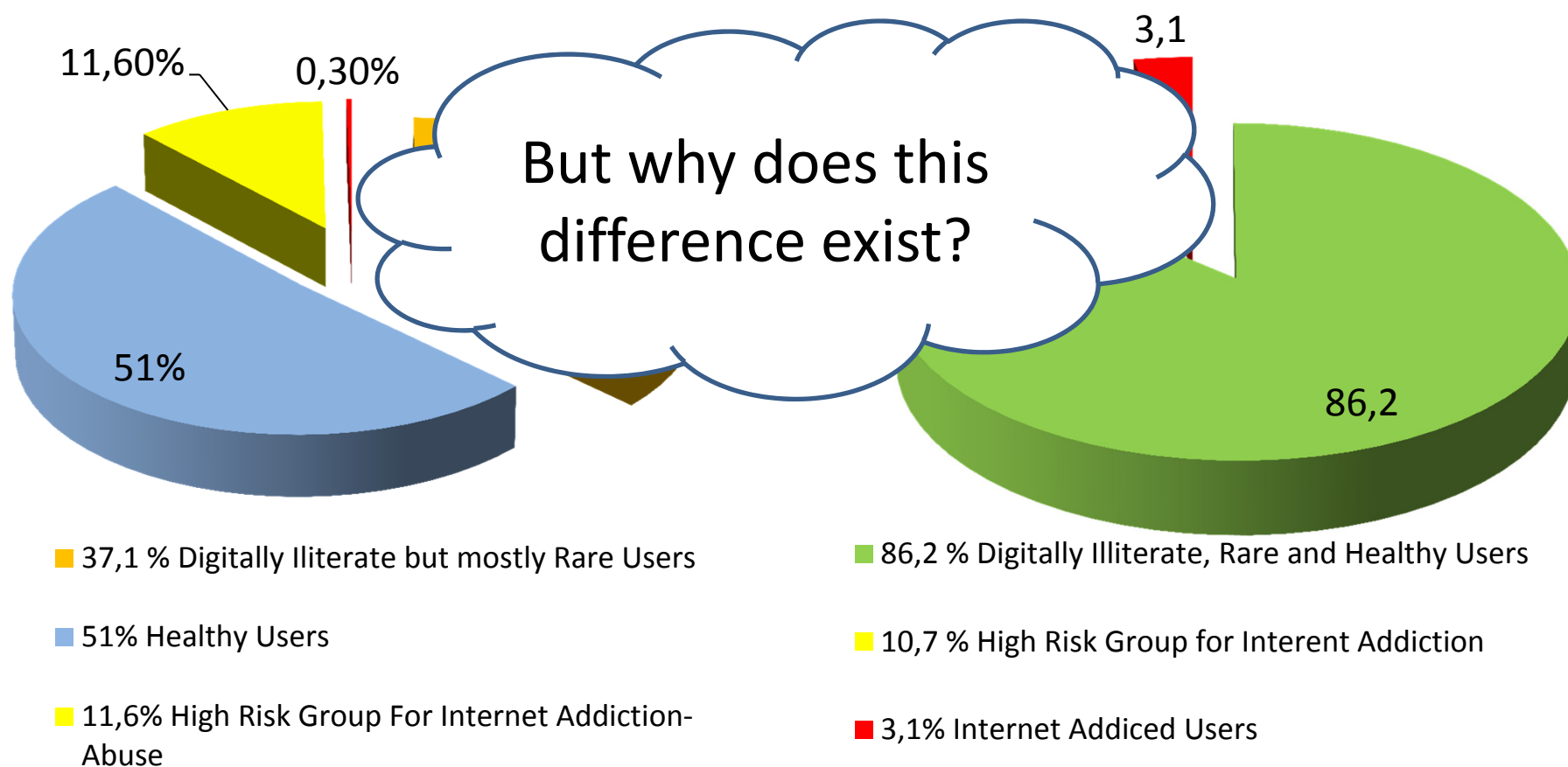
# Instruments

- Internet use was assessed with:
- ***The Internet Addiction Test (Young, 1998)***  
***Cronbach  $\alpha = 0,91$***
- ***The Young Diagnostic Questionnaire (Young, 1998)***
- Internet Flow was assessed with:
- **Internet Flow Questionnaire (Chen, Wigand & Nilan, 1999) Cronbach  $\alpha = 0,58$**
- Impulsivity- Compulsivity was assessed with:
- ***The Impulsive Compulsive scale of the Symptom Check List – 90 (Derogatis, 1994) Cronbach  $\alpha = 0,79$***

# Question 1

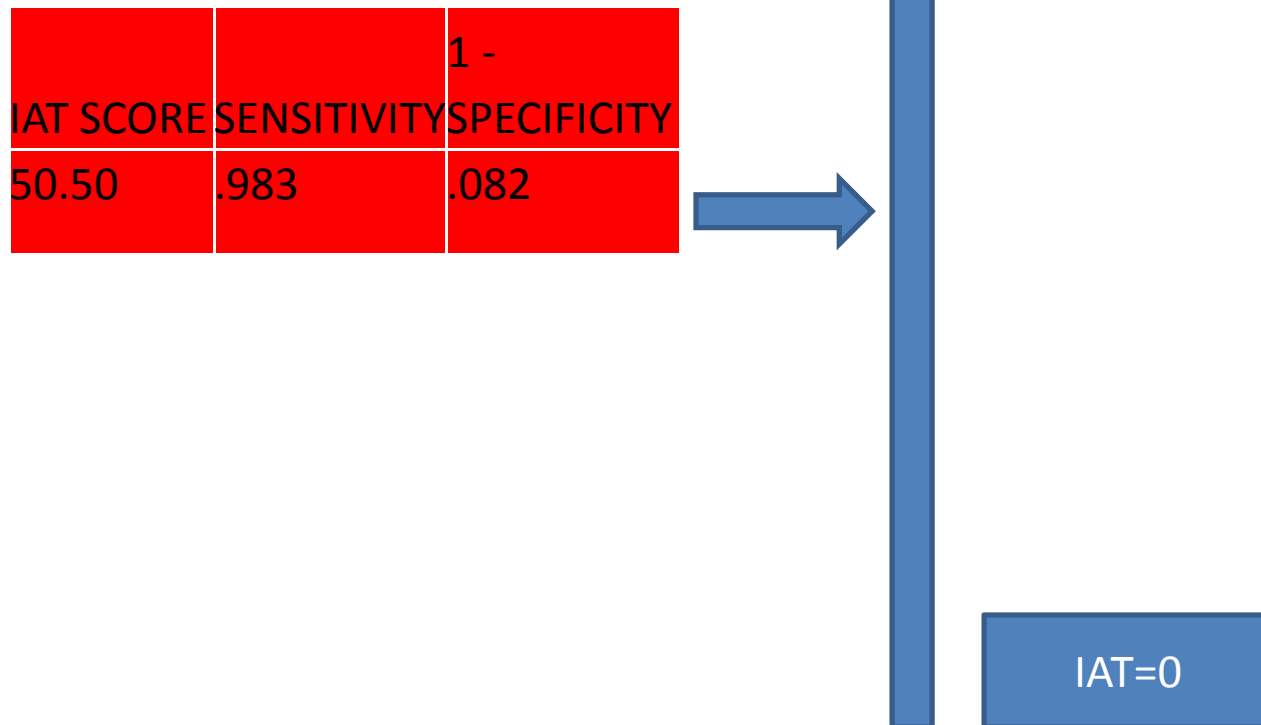
What is the prevalence of Internet Addiction among Greek high school students?

# One sample, two different criteria

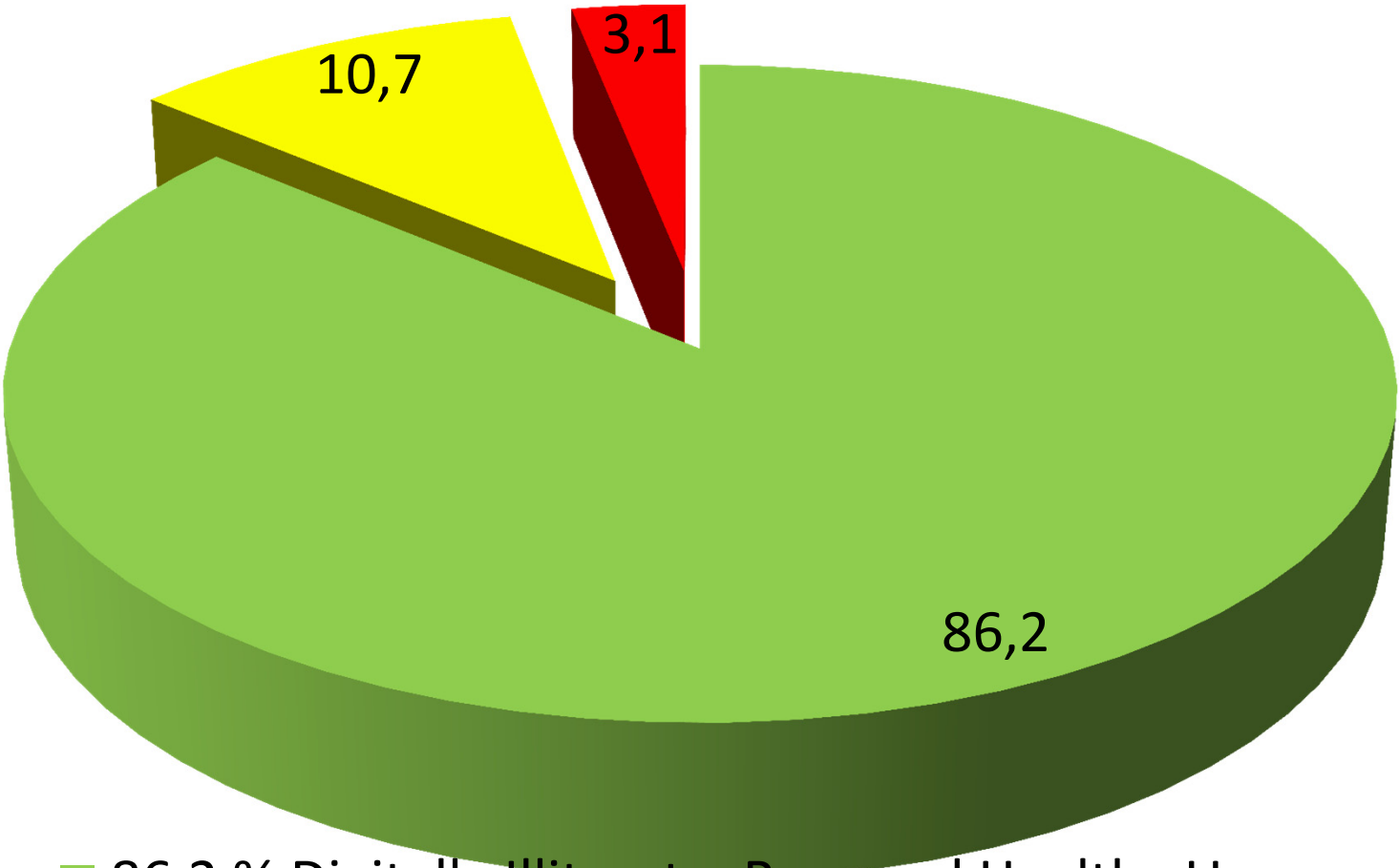


# Possible Answer....

- Crosscultural Differences in cut off point scores...
- To examine this hypothesis
- We conducted ROC curve analysis to propose new cut of points...



Based on our results we estimate the Prevalence of IAD



- 86,2 % Digitally Illiterate, Rare and Healthy Users
- 10,7 % High Risk Group for Internet Addiction
- 3,1% Internet Addicted Users

## Question 2

Do Impulsive Compulsive behaviors and Internet Flow predict Internet Addiction?



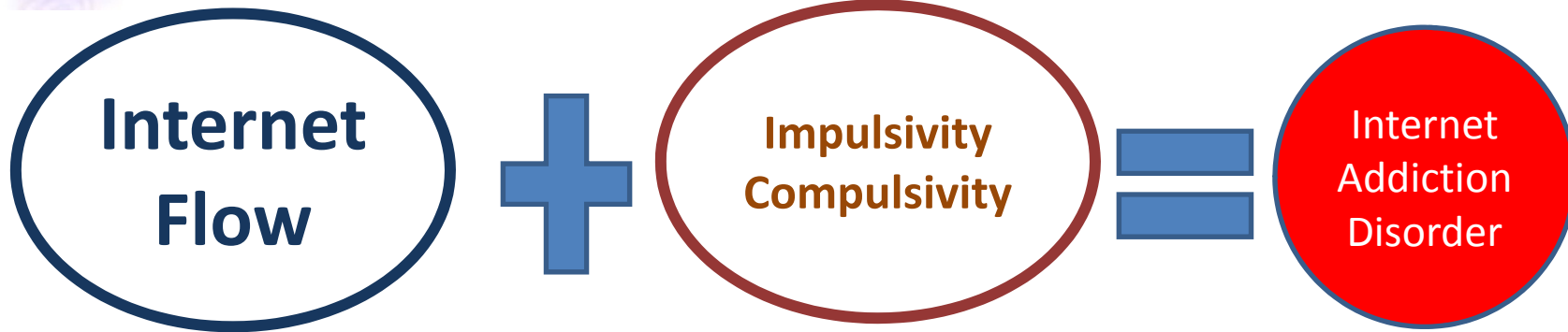
# Results

- In order to answer this question we performed a multiple linear regression analysis (Stepwise Method)
- All Collinearity Diagnostic Criteria were within permissible for the analysis limits (*VIF* < 2, *Tolerance* > 0,5, *Condition Index* < 15)





# Results



Predictors	<i>B</i>	SE	<i>Beta</i>	<i>p</i>
Flow	5.01	0.30	0.39	0.000
Impulsivity - Compulsivity	6.05	5.90	0.24	0.000



# Results

- The analysis findings supported our initial hypotheses.
- Multiple Correlation Index was  $R = 0.52$
- Regression Coefficient was  $R^2 = 0,27$
- *Adjusted* Regression Coefficient was  $R^2 = 0,27$
- The slope of the regression line was significantly different from zero  $\{F (1, 1442) = 265.72, p = 0,0000.\}$

## Question 3

Does Impulsive Compulsive behavior mediate the relationship between Flow of internet activity and levels of Internet Addiction ?



# Results

- We examined Impulsivity and Compulsivity, as proposed mediator of the effect of Flow on Internet Addiction .
- For this purpose we performed bootstrapping on the minimum recommended 1000 samples
- we calculated the Sobel test for the total and specific indirect effects as well bias-corrected and accelerated bootstrap confidence intervals for the indirect effects as proposed by Preacher and Hayes at 2008 \*.



# Results seem to support our hypotheses

**Table 2**

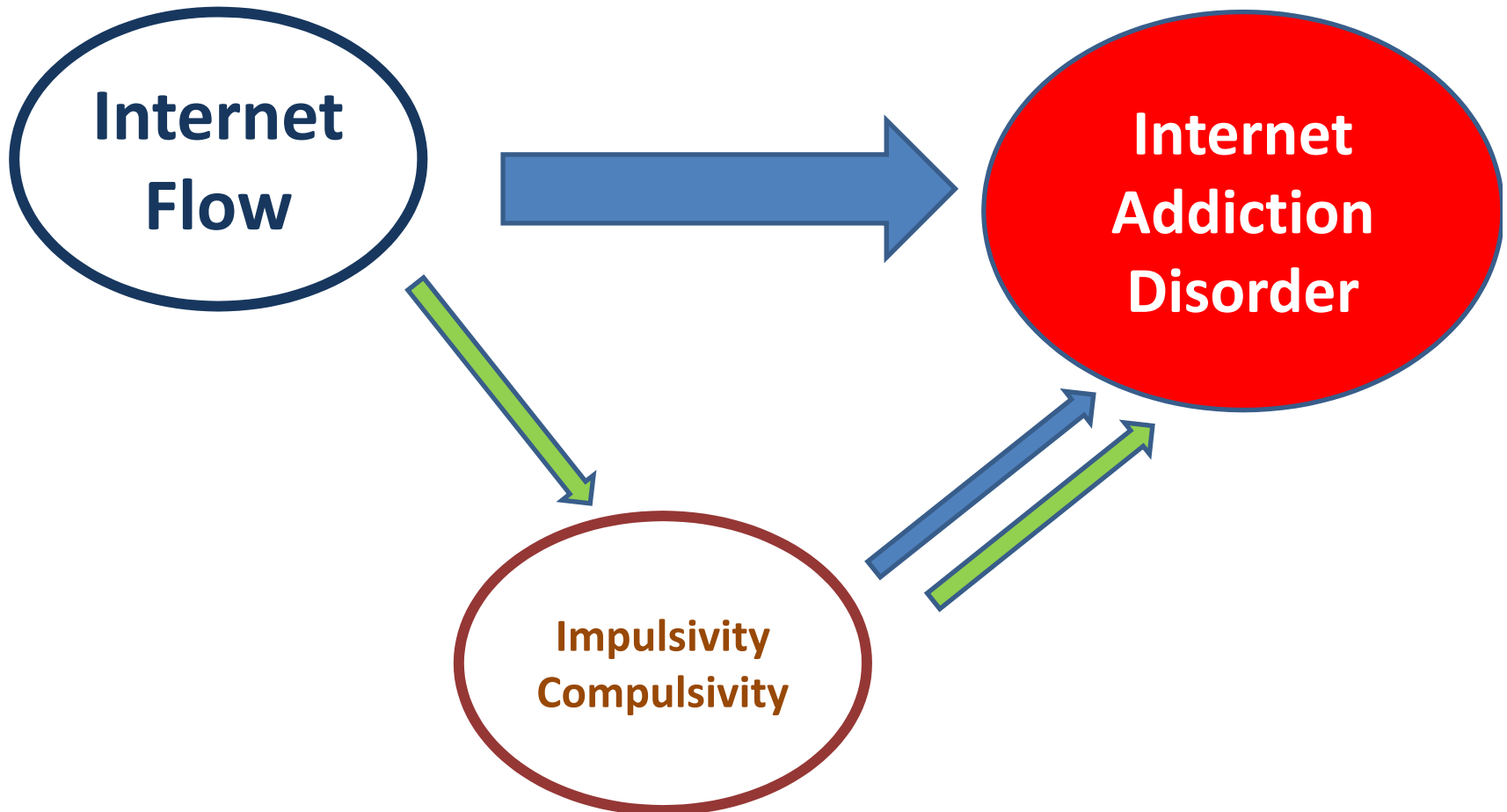
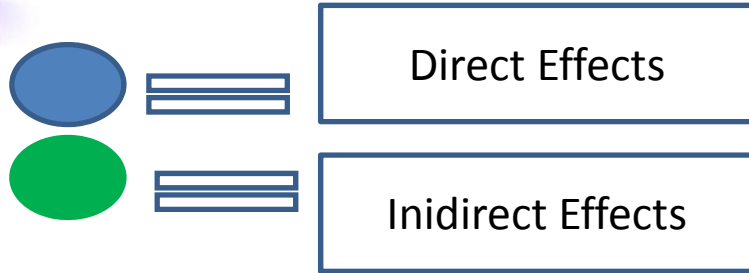
## **Mediation of the Effect of Flow on Internet Addiction through Impulsivity Compulsivity**

	Product of Coefficients				Bootstrapping	
	Point Estimate	<i>SE</i>	<i>Z</i>	<i>P</i>	BCa 99% CI	
					Lower	Upper
	Indirect Effects					
<b>Impulse Compulse</b>	<b>0.90</b>	<b>0.12</b>	<b>7.71</b>	<b>.001</b>	<b>0.66</b>	<b>1.17</b>
<b>Total</b>	<b>0.90</b>	<b>0.12</b>	<b>7.71</b>	<b>.001</b>	<b>0.66</b>	<b>1.17</b>

Note—BC, bias corrected; BCa, bias corrected and accelerated; 1,000 bootstrap samples.



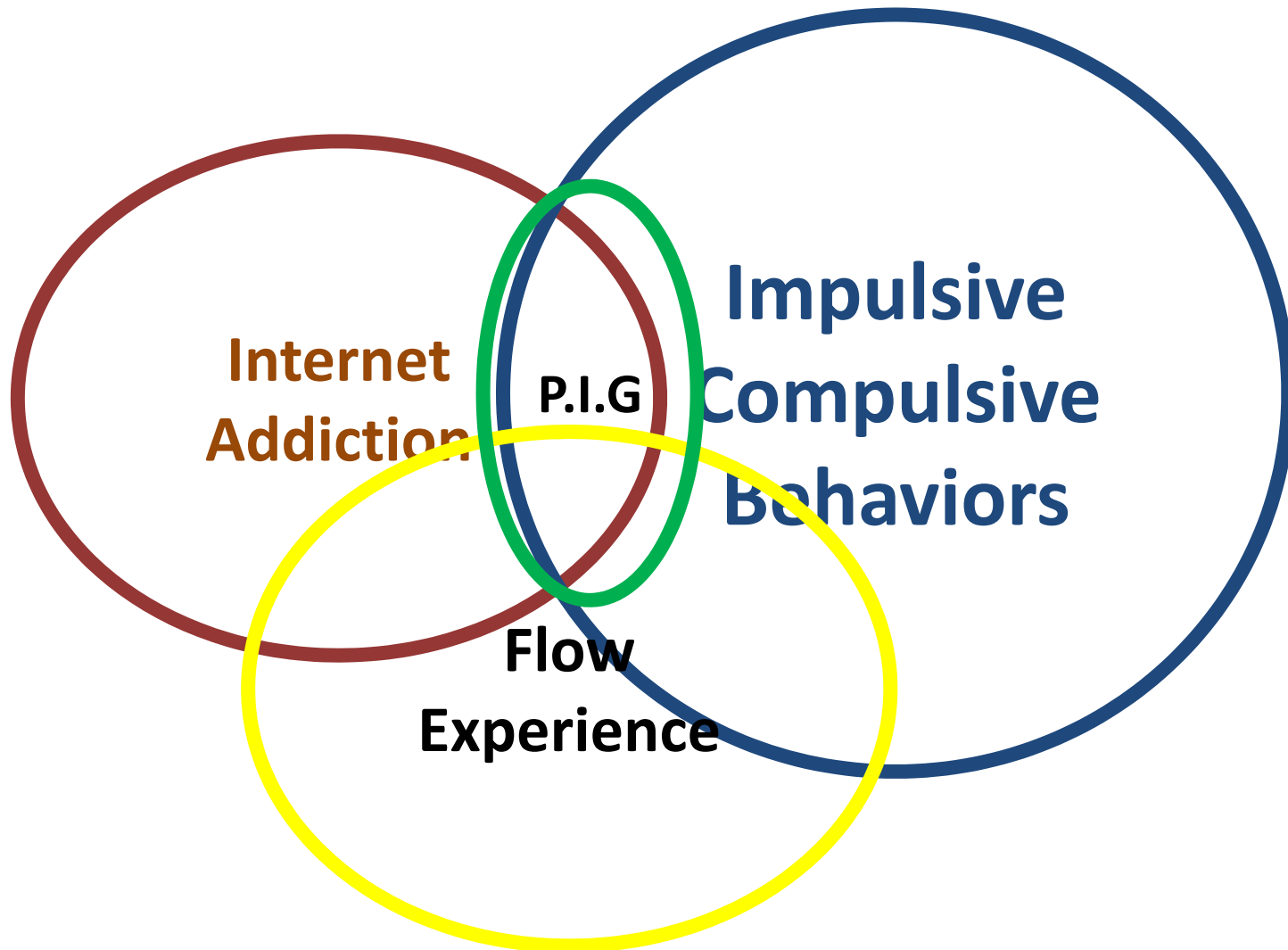
# Results in Picture



# Take Home Message

- A user who is in Flow when online
- stimulates Positive Immediate Gratification tendencies
- Which might progressively recycle and expand to other aspects of his life
- Ending either to strengthen Impulsive Compulsive manifestations that already exist, or initializing them

# Take Home Message



**Internet  
Addiction**

**P.I.G**

**Impulsive  
Compulsive  
Behaviors**

**Flow  
Experience**



Thank you

# Discussion: Question 1 Finding:

- The significantly lower than the U.S. Greek Cut off point in IAT Stresses:
- The need for indigenous measures(emic approach)
- The possible effect of the individualism – Collectivism Cultural Dimension
- Countries with higher individualism show a higher rate of internet adoption, because as something new, it is considered less threatening for the prevailing norm (Erumban & De Jong, 2006).
- Higher collectivism gives more modest answers to likert scales, due to less tolerance of inequality (Triandis, 1996)
- Matters of Scalar Equivalence: Collectivists direct their evaluation more toward interdependency with their in group and less to self-related issues (Triandis, 1996)
- And Less than one fourth of IAT questions refers to consequences in relations with others.