4.3 Kendall's tau-b

dichotomous, ordinal, scale

Example Ein Zusammen-Job-Zufried.

sav

X = income class ordinal

Y = degree of satisfaction ordinal

Income class	Job satisfaction			
	very diss.	little diss.	mod. s.	very satisfied
< 500	20	24	80	82

6000 - 15000	22	38	104	125
15000 - 25000	13	23	81	113
> 25000	7	18	54	92

$n = 301$

$\tau_b = 0.088$ weak positive relationship

concordant : a pair of two persons a and b are called a concordant pair, if a has a higher income than b and a is more satisfied than b.

discordant : a pair of two persons

a and b are called a discordant pair, if a has a higher income than b but a is less satisfied than b.

C = # concordant pairs = 109 520

D = # discordant pairs = 84 915

$$\tau_b = \frac{C - D}{\ldots\ldots\ldots} \quad \in [-1; +1]$$

Kendall's tau - b

SPSS-Commands 4.7

$\tau_b = 0.088$

weak relationship that people with low income are dissatisfied and people with high income are satisfied.

4.4 Gamma Coefficient

$$\gamma = \frac{C - D}{C + D} \quad \in [-1; +1]$$

dichotomous, ordinal, scale

⚠ γ is more sensitive than τ_b!

Example Einkommen-Job-Zufried.

sav

γ (income-class, degree of satisf.) = 0.127

SPSS-Commands 4.7

→ positive weak relationship between income and job satisfaction

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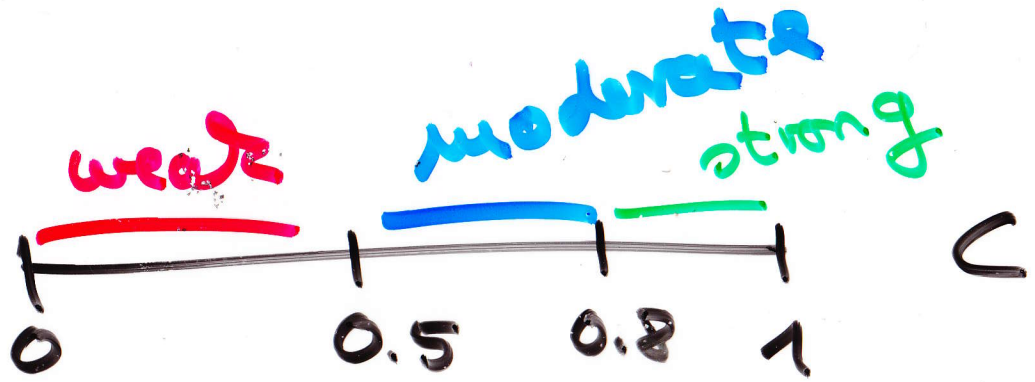
4.5 Coefficient of contingency

nominal, ordinal, scale

$C \in [0, 1)$



Example Environment - Job - Satisf.

Sav

C (income, satisfaction) = 0.115 weak relationship

No sign

4.6 Summary

Measure	Level	Direction
r of Pearson	scale	yes
ρ of Spearman	dichotomous ordinal scale	yes
τb	dichotomous ~~ordinal~~ scale	yes

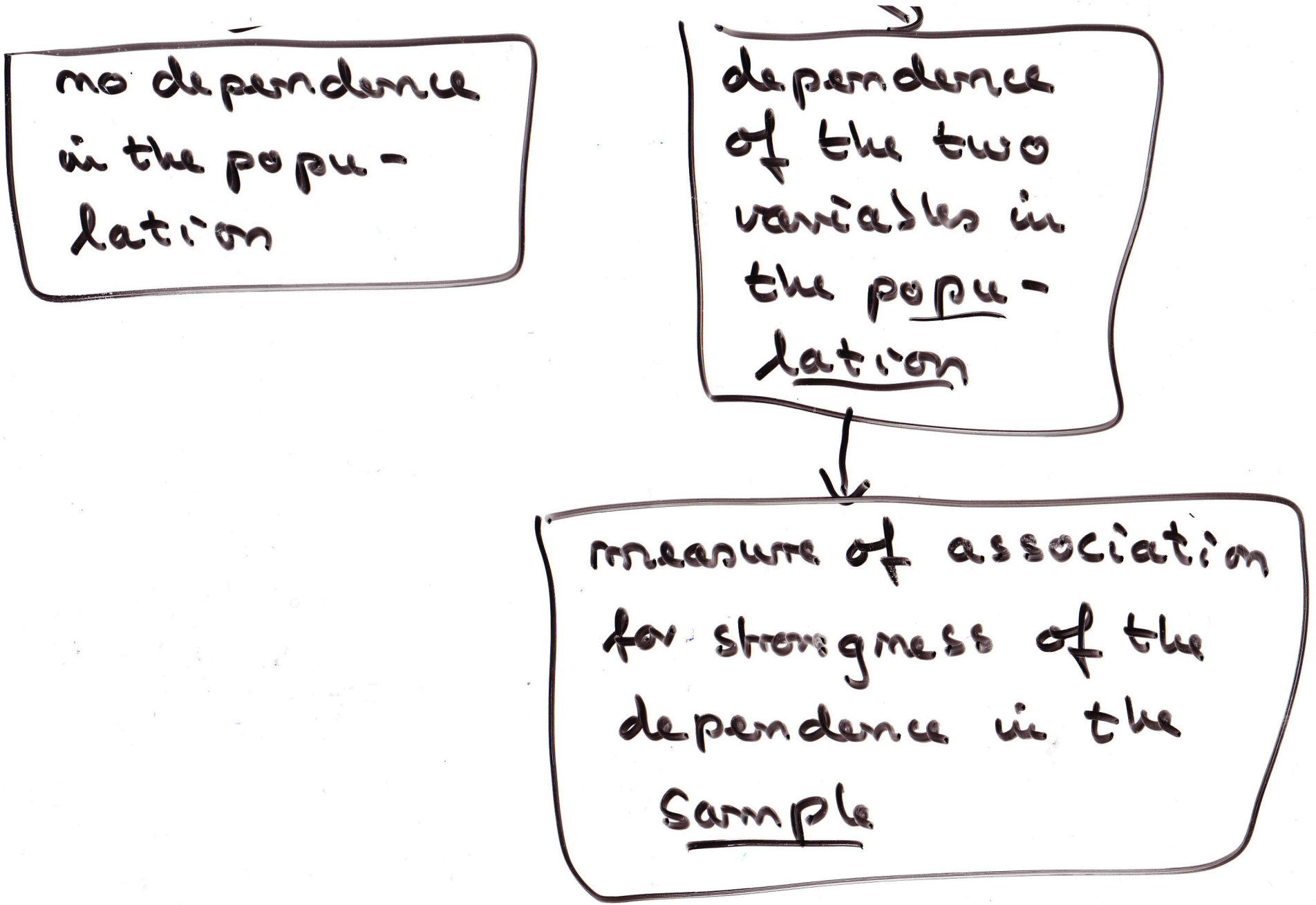
Y	dichotomous ordinal scale	Y$_2$
C	nominal ordinal scale	no

Chi-Square test of independence

Rejection of H_0?

no

Yes


no dependence in the popu-lation
dependence of the two variables in the popu-lation
measure of association for strongness of the dependence in the sample

Example customer_dbase.sav

a) Pearson chi-Square test of indepen-
dence

b) Measure of association

Homework 1.3 1.4 2.1