

Niamh at 9 months



Niamh at 3 years



Niamh at 5 years



Defining Crisis Pregnancy

Implications of operationalisation for understanding risk factors and for assessing the impact of crisis pregnancy on parent and child outcomes

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Defining Crisis Pregnancy (CP)

- Definition in Irish statute: "a pregnancy which is neither planned nor desired by the woman concerned, and which represents a personal crisis for her" (S.I. No. 446/2001)
- **Aims:**
 - 1. Explore alternative ways of measuring CP in GUI
 - 2. Explore risk factors for different CP 'types'
 - 3. Assess relevance of CP to explaining:
 - Mother outcomes (Stress)
 - Infant outcomes (social-behavioural difficulties; SDQ)



What we know about Crisis Pregnancy

- **Incidence:**

- 1 in 7 pregnancies in 2010 classified as CP
- 1 in 3 women who have experienced pregnancy have at some point experienced CP

- **Outcomes:**

- 73% end in parenthood
- 24% end in abortion
- Higher psychological distress while pregnant, using metric of emotional wellbeing (McBride et al. 2012)

- **Predictors:** e.g. Age, Education, Unmarried, Difficult relationship, School/Work commitments, First preg., Financial problems



Effects of 'unwanted' pregnancy

- **Studies have focused on effects of 'unintended', 'mistimed' or 'unwanted' pregnancies:**
 - Negative maternal behaviours like smoking/drinking during pregnancy (Gipson et al. 2008);
 - Late prenatal care, reduced breastfeeding (Joyce et al. 2000)
 - Higher levels of maternal stress and neuroticism (Bouchard 2005);
 - Higher levels of maternal depression, negative parenting techniques (Barber et al. 1999)



Child social & behaviour problems

- **Direct and indirect link of unintended pregnancy and child development:**
 - Detrimental effects on psychosocial development lasting into adulthood (David 1992; Mulder et al. 2002)
 - Lower self-esteem into young adulthood (Axinn et al. 1998)
 - Some evidence of greater behavioural problems among 'unwanted' children (Joyce et al. 2000)
 - Children of stressed or depressed mothers displayed more conduct, behaviour and social interactive problems than other children (Beck 1999; Petterson & Albers 2001; Cogill et al. 1986)



CP & GUI

- **Factors implicated in defining CP:**
 - **1. Intentions**
 - **2. Trauma (Stress)**
 - **Stressor:** stress due only to pregnancy or other reasons?
- CP is different to ‘unintended’ or ‘unwanted’ pregnancy theoretically



Stress

TABLE 1: At any time during the pregnancy did you feel under any stress?

	<i>Freq.</i>	<i>Cum.</i>
A great deal	9.1	9.1
Some	35.8	44.9
Not much	30.5	75.4
None at all	22.8	98.2
DK	1.8	100
Total % (N)	100	(10,953)

Note: data from GUI wave 1; figures may not sum due to rounding; DK: don't know



Intentions

TABLE 2: Did you intend to become pregnant before baby was conceived?

	<i>Freq.</i>	<i>Cum.</i>
Yes, at that time	57.2	57.2
Yes, but earlier	6.2	63.4
Yes, but somewhat later	9.9	73.3
Yes, but much later	6.5	79.8
No intention of ever becoming pregnant	9.6	89.4
Unsure/Didn't mind	7.1	96.5
Other/DK	3.5	100
Total % (N)	100	(10,953)

Note: data from GUI wave 1; figures may not sum due to rounding; DK: don't know



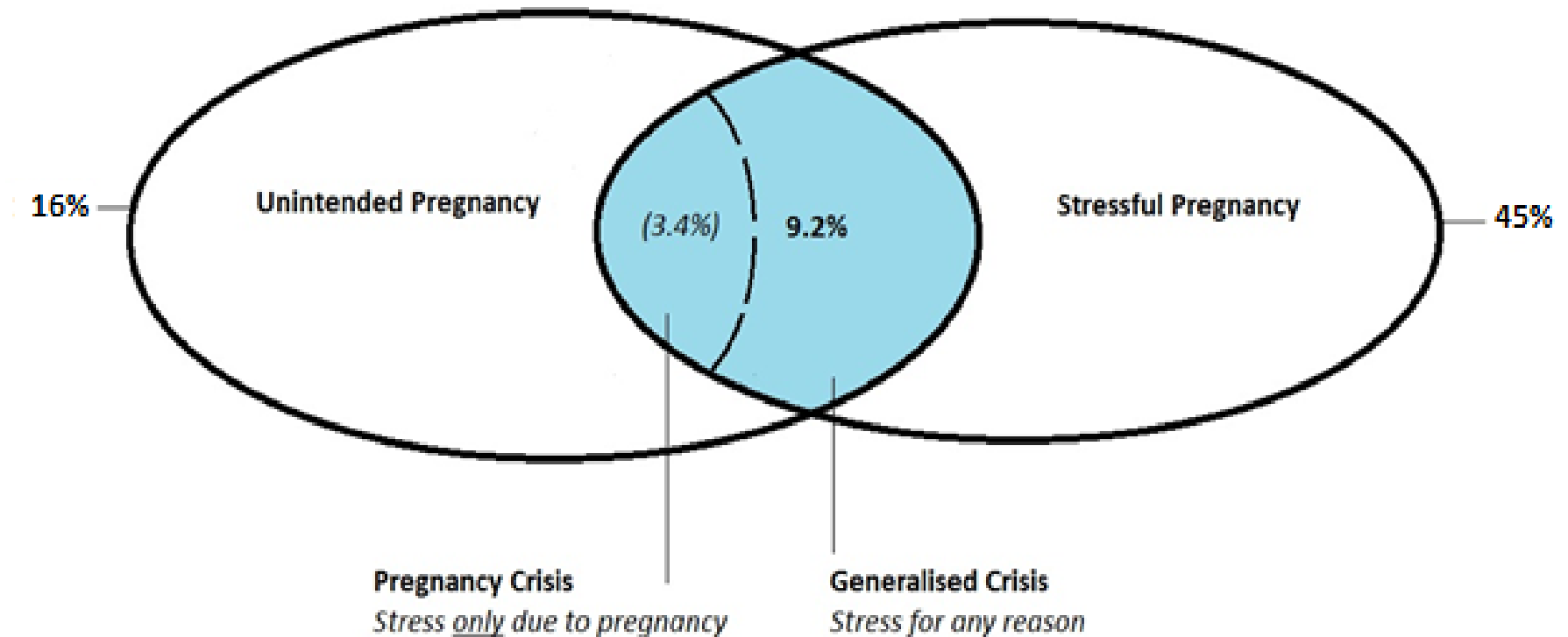
Intentions vs. Stress

TABLE 3: Crosstabulating stress levels with intentions towards pregnancy

<i>Intention</i>	<i>Stressed</i>	<i>Unstressed</i>	<i>Total %</i>
Yes, at that time	41.6	58.4	100
Yes, but much later	56.8	43.2	100
No intention of ever...	55.6	44.4	100

Note: data from GUI wave 1;

Defining CP





Multiple measures of CP (I)

<i>Did you intend pregnancy before baby was conceived?*</i>	<i>Extent of stress during pregnancy?</i>	<i>Stress <u>only</u> due to pregnancy?</i>	% of sample**	N
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1. GC (Generalised Crisis)	'Much later' / 'No intention'	Some — A great deal	N	9.2%	990
2. PC (Pregnancy Crisis)	'Much later' / 'No intention'	Some — A great deal	Y	3.4%	369
3. HSGC (High-Stress)	'Much later' / 'No intention'	A great deal	N	2.9%	310
4. HSPC (High-Stress)	'Much later' / 'No intention'	A great deal	Y	1.1%	118



Multiple measures of CP (II)

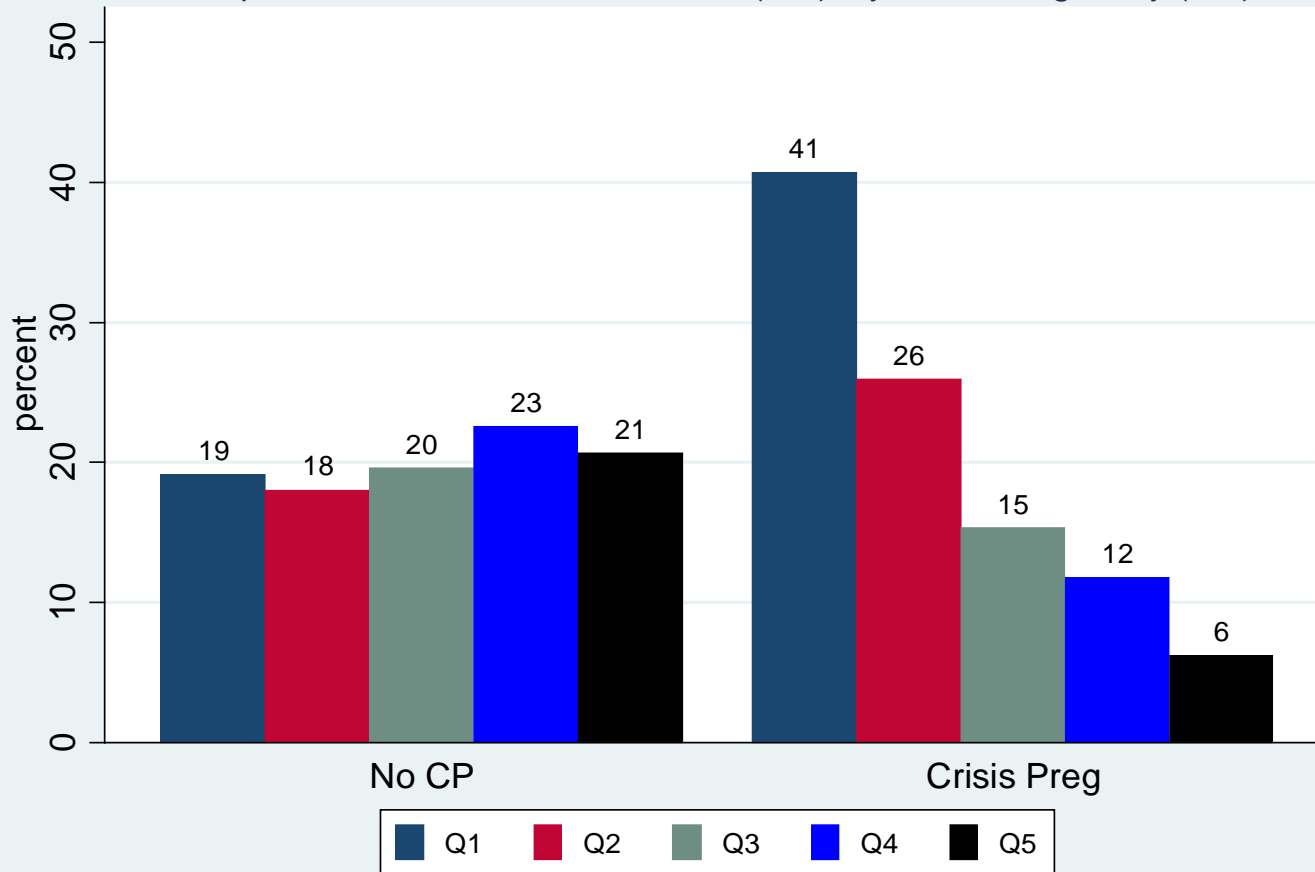
*Did you intend pregnancy before baby was conceived?** *Extent of stress during pregnancy?* *Stress only due to pregnancy?* % of sample** N

5. NGC	'No intention'	Some — A great deal	N	5.5%	586
6. NPC	'No intention'	Some — A great deal	Y	2.2%	236
7. NSGC	'No intention'	A great deal	N	1.8%	192
8. NSPC	'No intention'	A great deal	Y	0.7%	73

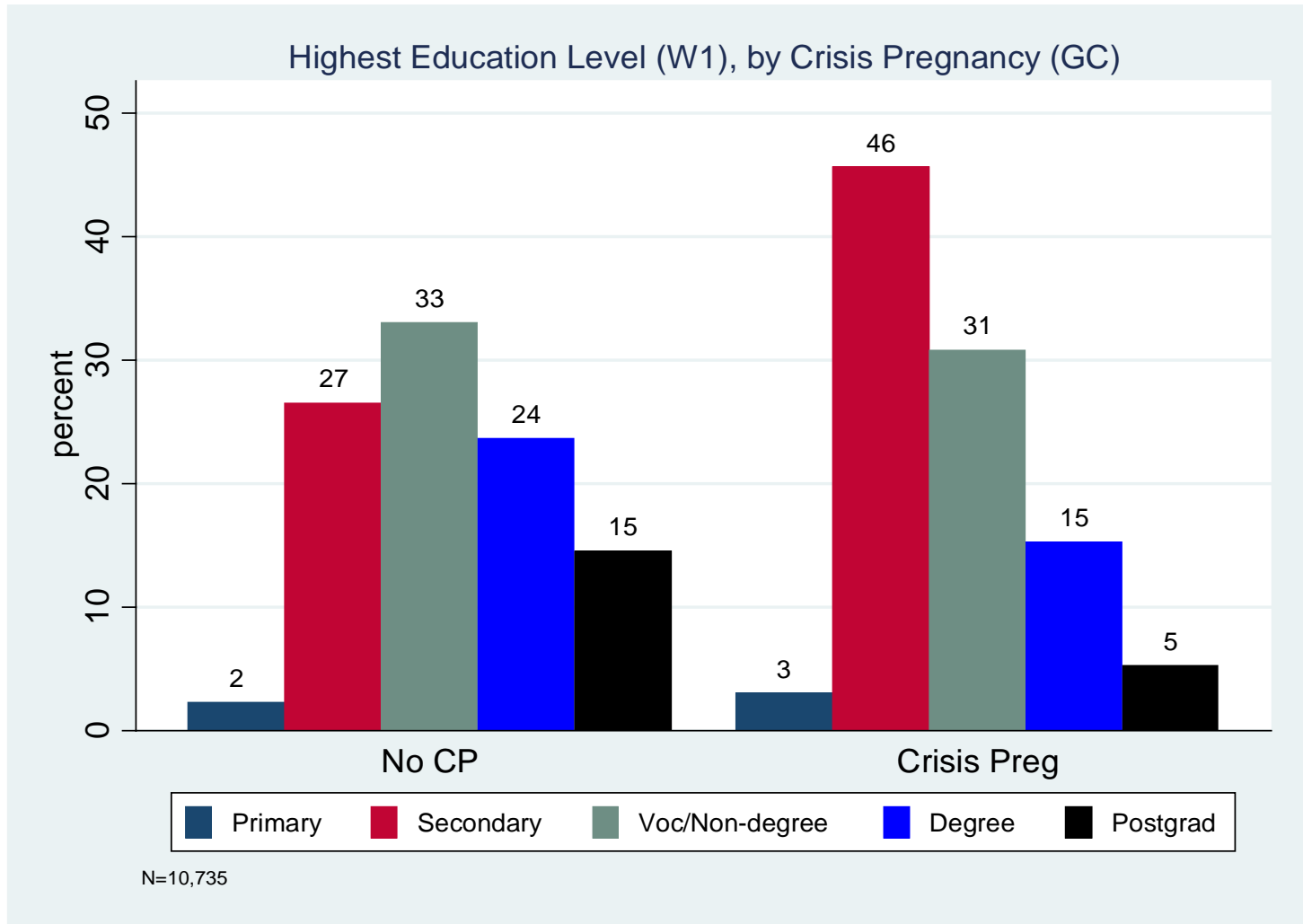
Notes: from GUI wave 1 data; *'no intention [of ever becoming pregnant]'; **total sample size is 10,740 when Don't Knows and missing data have been excluded; Y = Yes

Income and CP

Proportions in each Income Quintile(W1), by Crisis Pregnancy (GC)



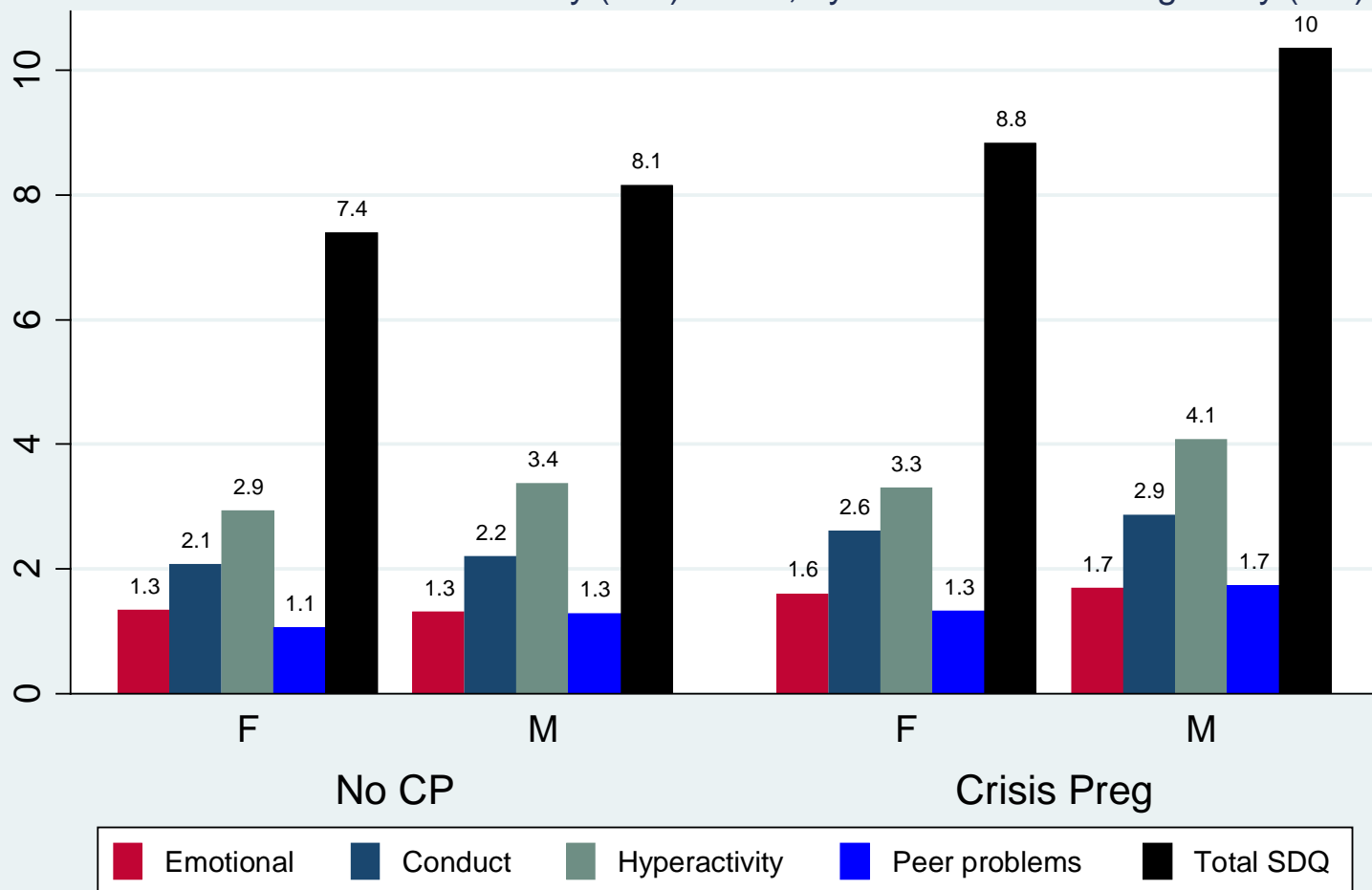
Education level and CP





Social Difficulties index mean scores

Mean scores on SDQ difficulty (sub)scales, by sex and Crisis Pregnancy (GC)



Note: population-weighted graph; M = Male



Empirical Analysis

- Assessing CP risk factors
- Using CP indicators to predict:
 - **Stress** (30-pt self-report scale)
 - **Child social and behavioural difficulties** (32-pt parent-report measure, SDQ: Goodman, 1997)
- Controls for:
 - Marital status
 - Income quintile
 - Education level
 - Age
 - Num. children in hhd
 - Mother employed at W1
 - Complications in pregnancy
 - Maternal disability
 - Poor current maternal health
 - Family history of poverty
 - Being a native English speaker
 - Urban/rural dweller
 - *Smoking while pregnant*
 - *Drinking while pregnant*
 - *Stress/depression at W1 and W2 (some models)*



Results (I) - Risk factors

Determinants of Different Crisis Pregnancy Types: logistic regression (odds ratios): W1 weight

	GC	PC	HSGC	HSPC	NGC
main					
[REF] Married	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)
Unmarried-cohab	2.980*** (0.356)	2.919*** (0.535)	3.983*** (0.846)	3.427*** (1.121)	2.749*** (0.445)
Solo	7.108*** (0.965)	4.668*** (0.962)	11.191*** (2.512)	5.385*** (2.002)	8.930*** (1.555)
[REF] 1_inc_quintilesw1	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)
2_inc_quintilesw1	1.152 (0.145)	1.102 (0.205)	0.773 (0.162)	0.547* (0.175)	1.058 (0.162)
3_inc_quintilesw1	0.796 (0.116)	0.745 (0.166)	0.543** (0.141)	0.579 (0.229)	0.671** (0.131)
4_inc_quintilesw1	0.696** (0.118)	0.694 (0.180)	0.548** (0.151)	0.359** (0.170)	0.636* (0.149)
5_inc_quintilesw1	0.531*** (0.114)	0.403*** (0.137)	0.243*** (0.090)	0.084*** (0.057)	0.400*** (0.123)
[Education] Primary	0.683 (0.199)	1.500 (0.533)	0.619 (0.297)	1.492 (0.915)	0.745 (0.246)
REF [Education] Secondary	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)	1.000 (.)
[Education] Non-Degree	1.146 (0.131)	0.876 (0.155)	1.476* (0.294)	1.311 (0.425)	1.058 (0.154)
[Education] Degree	1.124 (0.164)	1.158 (0.249)	1.994*** (0.499)	2.103** (0.788)	0.849 (0.170)
[Education] Postgrad	0.906 (0.188)	0.590 (0.198)	3.201*** (1.013)	2.314* (1.070)	0.516** (0.152)

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Results (I) – Risk factors, Pt 2

Determinants of Different Crisis Pregnancy Types: logistic regression (odds ratios): W1 weight

	GC	PC	HSGC	HSPC	NGC
PCG Age at W1	0.950*** (0.010)	0.954*** (0.015)	0.964** (0.015)	0.970 (0.021)	0.973** (0.012)
Num children in hsd at W1	1.382*** (0.063)	1.416*** (0.089)	1.430*** (0.109)	1.395*** (0.164)	1.457*** (0.078)
Had Complications in Pregnancy	1.473*** (0.140)	1.530*** (0.224)	2.062*** (0.336)	2.598*** (0.691)	1.667*** (0.203)
Disability/Chronic Illness	1.443*** (0.195)	1.360 (0.289)	1.526* (0.357)	1.164 (0.424)	1.212 (0.208)
PGC was employed at W1	1.014 (0.106)	1.082 (0.175)	0.989 (0.179)	1.148 (0.327)	0.963 (0.129)
PCG Health is Poor/Fair	1.294 (0.214)	1.577* (0.368)	1.334 (0.338)	1.813 (0.684)	1.357 (0.267)
PCG has family history of poverty	0.933 (0.109)	0.739 (0.141)	0.979 (0.193)	0.829 (0.277)	1.134 (0.164)
Rural dweller (REF: Urban)	0.917 (0.087)	0.878 (0.124)	0.799 (0.126)	0.844 (0.209)	0.916 (0.112)
English is native language?(Yes=1)	1.000 (0.131)	0.857 (0.171)	1.037 (0.233)	1.143 (0.465)	0.945 (0.162)
Constant	0.170*** (0.059)	0.068*** (0.039)	0.021*** (0.012)	0.008*** (0.007)	0.046*** (0.020)
N	9857	9857	9857	9857	9857
F-test	0.000	0.000	0.000	0.000	0.000
AIC	5082	2503	2103	1001	3490

Note: Reference category for marital status is 'Married', for Education is 'Secondary only', for Income is 'Low'.
 * p<0.10, ** p<0.05, *** p<0.01

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Results (I) – Risk factors, Pt 2

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Note: Reference category for marital status is 'Married', for Education is 'Secondary only', for Income is 'Low'.
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Risk factors: Summary

- Substantial variation in effect sizes
- Some indicators increase the risk for certain types of CP and decrease it for others (eg Education)
- Risk factors not wholly in line with prior research (eg Education & Age not significant for every type)
- Some risk factors are significant for certain types of CP, but not for others



Results (II) - Stress

- **Controls w/ significant and positive correlation (higher stress):**
 - Age
 - Complications in pregnancy
 - Maternal disability
 - Urban dweller
 - Non-native English speaker
 - Solo & Unmarried-cohabitant parents vs Married parents
 - Controls for Stress and Depression at Wave 1

Results (II) - Stress

Predicting PCG Stress score at Wave 2

	GC	PC	HSGC	HSPC	NGC
gc	0.778*** (0.193)				
pc		0.595* (0.325)			
hsgc			0.822** (0.369)		
hspc				1.451** (0.613)	
ngc					0.839*** (0.263)
npc					
nsgc					
nspc					
Constant	8.106*** (0.488)	8.123*** (0.488)	8.122*** (0.488)	8.136*** (0.487)	8.128*** (0.489)
N	8558	8558	8558	8558	8558
F-test	0.000	0.000	0.000	0.000	0.000
AIC	46778	46798	46794	46792	46784
R2	0.198	0.196	0.196	0.196	0.197

Note: Reference category for marital status is 'Married', for Education is 'Secondary only', for Income i
 * p<0.10, ** p<0.05, *** p<0.01

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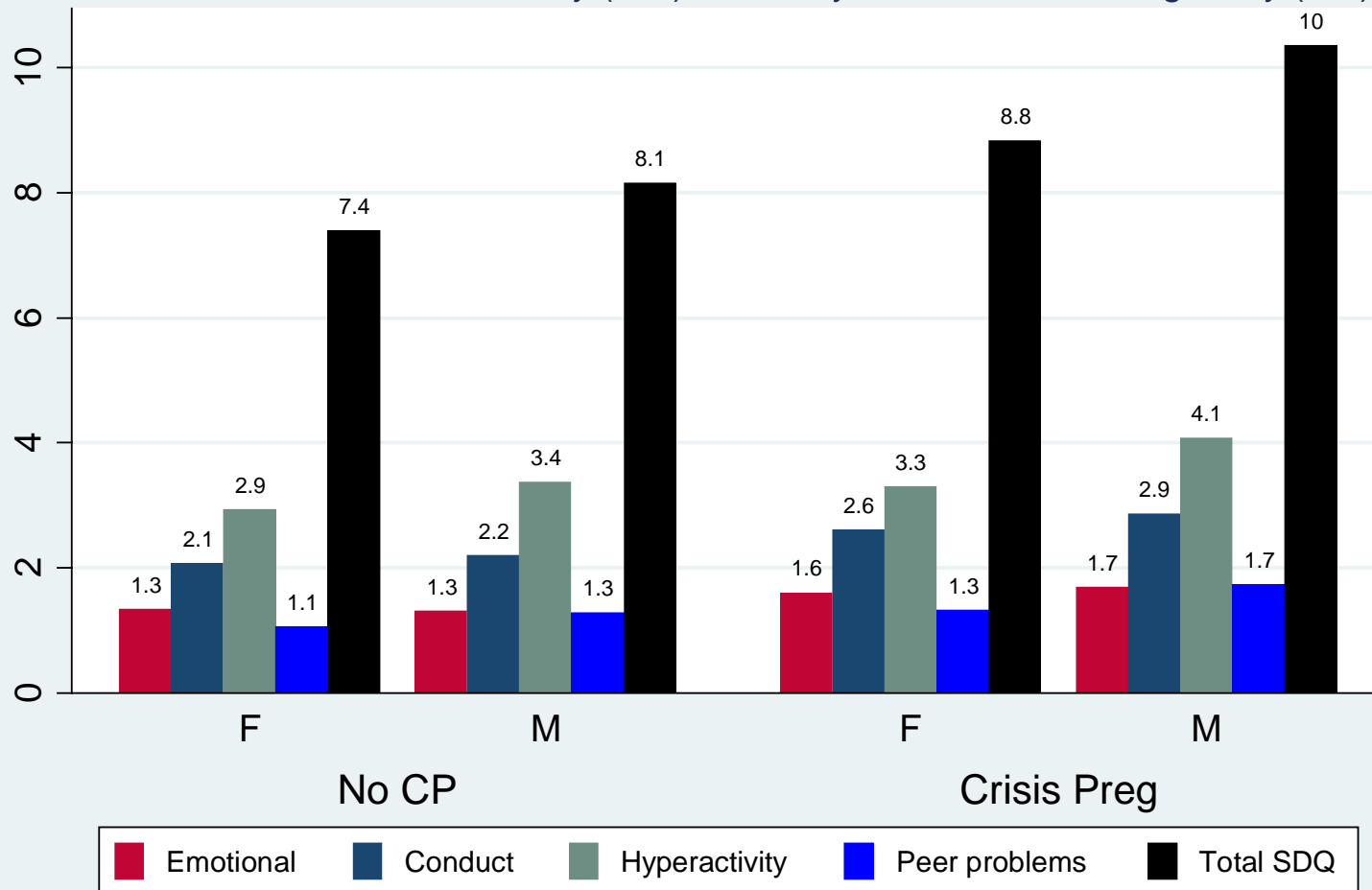
Results (II) - Stress

- CP indicators (5 of 8) significant and positive
- *Also*, GC and NGC crisis indicators significantly predict higher scores on an index of maternal **Depression**, controlling for other factors (models not shown)
- **Summary:** experience of CP predicts higher maternal stress and depression scores 3 years after birth, even controlling for other determinants and prior stress/depression scores



Social Difficulties index mean scores

Mean scores on SDQ difficulty (sub)scales, by sex and Crisis Pregnancy (GC)



Note: population-weighted graph; M = Male



Results (III) –SDQ (males)

- **Controls w/ sig positive correlation (higher SDQ)**
 - Solo vs Married parents
 - Low income
 - Lower levels of education
 - Smoking/drinking while pregnant
 - Maternal disability
 - Poor maternal health
 - Family history of poverty
 - Non-native English speaker
- **Controls w/ sig, negative corr (lower SDQ)**
 - Age of mother
 - Num. children in hhd
 - Mother was employed at W1

Results (III) – SDQ index

Child social & behavioural difficulties (SDQM) score at 3 yrs

	GC	PC	HSGC	HSPC	NGC
gc	0.988*** (0.349)				
pc		0.461 (0.565)			
hsgc			1.315** (0.618)		
hspc				0.336 (0.964)	
ngc					0.766* (0.435)
npc					
nsgc					
nspc					
Constant	11.104*** (0.754)	11.156*** (0.754)	11.168*** (0.754)	11.154*** (0.755)	11.162*** (0.755)
N	4439	4439	4439	4439	4439
F-test	0.000	0.000	0.000	0.000	0.000
AIC	25922	25936	25928	25937	25931
R2	0.097	0.094	0.096	0.094	0.095

Note: Reference cat for marital status is 'Married', for Education is 'Secondary only', for Income is '1'
 * p<0.10, ** p<0.05, *** p<0.01

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Male Infant SDQ at 3 yrs: Summary

- 3 CP indicators predict higher scores on the SDQ index even controlling for a range of other factors
- CP effect **disappears** when controlling for maternal Stress scores (W1, W2), indicating CP effect on child behavioural outcomes is mediated by higher stress scores
- Effect of stress on SDQ remains significant even controlling for parenting behaviours



Limitations

- Lack information on maternal stress scores prior to pregnancy
- Lack subjective evaluations of mothers as to whether pregnancy constituted a 'crisis'
- Results apply only to mothers/infants for whom we had full data at W1 & W2 (does not account for attrition or missing data)
- Unobserved heterogeneity



Conclusions

- **Findings:**

- Can identify a number of 'types' of CP, which vary in their risk factors/covariates
- CP a risk factor for higher maternal stress 3yrs after birth
- CP implicated in higher SDQ (social difficulties) for children at 3yrs, as mediated by higher stress scores
- CP concept has utility alongside other concepts like 'unwanted' or 'mistimed' pregnancy
- Underscores importance of operationalisation
- Choice of measure is non-trivial



Implications & Future Research

- Potentially fruitful research avenues focusing on different '(sub)types' of CP?
- CP impact on other mother/child outcomes?
- Help to identify risk factors which may have policy applications in reducing or preventing CP?
- CP as a flag for identification of children at risk of behavioural problems, or for mothers at risk of increased stress during child's infancy?
- Congruence between objective and subjective measures of CP?



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Results (II) - Stress

Predicting PCG Stress score at Wave 2

	GC	PC	HSGC	HSPC	NGC
Married	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Unmarried-cohab	0.261* (0.140)	0.297** (0.140)	0.296** (0.140)	0.299** (0.140)	0.290** (0.140)
Solo	0.621*** (0.209)	0.743*** (0.206)	0.711*** (0.206)	0.751*** (0.205)	0.642*** (0.209)
1.inc_quintilesw1	-0.121 (0.191)	-0.110 (0.191)	-0.118 (0.191)	-0.121 (0.191)	-0.120 (0.191)
2.inc_quintilesw1	-0.271 (0.172)	-0.254 (0.172)	-0.253 (0.172)	-0.253 (0.172)	-0.260 (0.171)
3.inc_quintilesw1	-0.293* (0.151)	-0.296* (0.151)	-0.294* (0.151)	-0.303** (0.151)	-0.285* (0.151)
4.inc_quintilesw1	-0.105 (0.135)	-0.108 (0.135)	-0.110 (0.135)	-0.110 (0.135)	-0.104 (0.135)
[REF]5.inc_quintilesw1	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
[Education]Primary	0.564 (0.414)	0.522 (0.415)	0.559 (0.413)	0.526 (0.412)	0.546 (0.414)
REF[Education]Secondary	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
[Education]Non-Degree	0.000 (0.124)	0.007 (0.124)	-0.005 (0.124)	-0.001 (0.124)	0.005 (0.124)
[Education]Degree	0.148 (0.139)	0.147 (0.139)	0.135 (0.140)	0.138 (0.139)	0.154 (0.139)
[Education]Postgrad	0.198 (0.159)	0.196 (0.159)	0.176 (0.160)	0.183 (0.159)	0.201 (0.159)
PCG Age at W1	0.030** (0.012)	0.028** (0.012)	0.029** (0.012)	0.028** (0.012)	0.029** (0.012)
Stress score at W1	0.313*** (0.013)	0.317*** (0.013)	0.317*** (0.013)	0.317*** (0.013)	0.315*** (0.013)
Depression score at W1	0.129*** (0.015)	0.134*** (0.015)	0.131*** (0.015)	0.134*** (0.015)	0.132*** (0.015)
Num children in hsd at W1	-0.697*** (0.056)	-0.687*** (0.056)	-0.687*** (0.056)	-0.685*** (0.056)	-0.697*** (0.056)
Had Complications in Pregnancy	0.363*** (0.099)	0.375*** (0.098)	0.370*** (0.099)	0.369*** (0.099)	0.365*** (0.098)
Disability/Chronic Illness	0.388** (0.158)	0.395** (0.159)	0.394** (0.157)	0.400** (0.158)	0.397** (0.158)
PGC was employed at W1	-0.167 (0.122)	-0.169 (0.122)	-0.164 (0.122)	-0.166 (0.122)	-0.163 (0.122)



Results (II) - Stress

Predicting PCG Stress score at Wave 2

	GC	PC	HSGC	HSPC	NGC
PCG Health is Poor/Fair	0.230 (0.205)	0.213 (0.206)	0.226 (0.206)	0.205 (0.206)	0.214 (0.205)
PCG has family history of poverty	0.051 (0.126)	0.047 (0.127)	0.037 (0.126)	0.040 (0.126)	0.038 (0.126)
Rural dweller (REF: Urban)	-0.231** (0.099)	-0.232** (0.099)	-0.229** (0.099)	-0.232** (0.099)	-0.231** (0.099)
English is native language?(Yes=1)	-0.904*** (0.157)	-0.897*** (0.158)	-0.900*** (0.158)	-0.901*** (0.158)	-0.901*** (0.157)
gc	0.778*** (0.193)				
pc		0.595* (0.325)			
hsgc			0.822** (0.369)		
hspc				1.451** (0.613)	
ngc					0.839*** (0.263)
npc					
nsgc					
nspc					
Constant	8.106*** (0.488)	8.123*** (0.488)	8.122*** (0.488)	8.136*** (0.487)	8.128*** (0.489)
N	8558	8558	8558	8558	8558
F-test	0.000	0.000	0.000	0.000	0.000
AIC	46778	46798	46794	46792	46784
R2	0.198	0.196	0.196	0.196	0.197

Note: Reference category for marital status is 'Married', for Education is 'Secondary only', for Income is 'Low'.
 * p<0.10, ** p<0.05, *** p<0.01

Continued from previous slide...

Results (III) – SDQ index

Child social & behavioural difficulties (SDQM) score at 3 yrs

	GC	PC	HSGC	HSPC	NGC
Married	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Unmarried-cohab	0.243 (0.237)	0.290 (0.238)	0.278 (0.237)	0.303 (0.237)	0.284 (0.238)
Solo	1.173*** (0.355)	1.337*** (0.351)	1.272*** (0.351)	1.363*** (0.351)	1.240*** (0.354)
1.inc_quintilesw1	0.454 (0.327)	0.486 (0.328)	0.462 (0.327)	0.486 (0.327)	0.475 (0.328)
2.inc_quintilesw1	0.557* (0.286)	0.590** (0.288)	0.583** (0.286)	0.598** (0.288)	0.579** (0.287)
3.inc_quintilesw1	0.587** (0.263)	0.592** (0.263)	0.583** (0.263)	0.596** (0.263)	0.600** (0.263)
4.inc_quintilesw1	0.109 (0.218)	0.113 (0.218)	0.107 (0.218)	0.116 (0.218)	0.119 (0.218)
[REF]5.inc_quintilesw1	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
[Education]Primary	0.610 (0.660)	0.601 (0.649)	0.647 (0.648)	0.631 (0.645)	0.602 (0.656)
REF[Educational]Secondary	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
[Education]Non-Degree	-0.648*** (0.211)	-0.628*** (0.211)	-0.655*** (0.212)	-0.631*** (0.211)	-0.635*** (0.211)
[Education]Degree	-0.844*** (0.235)	-0.828*** (0.235)	-0.859*** (0.235)	-0.831*** (0.235)	-0.829*** (0.235)
[Education]Postgrad	-0.963*** (0.269)	-0.947*** (0.270)	-0.990*** (0.270)	-0.954*** (0.271)	-0.945*** (0.270)
PCG Age at W1	-0.068*** (0.019)	-0.071*** (0.019)	-0.070*** (0.019)	-0.071*** (0.019)	-0.071*** (0.019)
Smoked while pregnant	0.464* (0.247)	0.524** (0.248)	0.473* (0.246)	0.528** (0.248)	0.489** (0.246)
Drank alcohol while pregnant	0.413** (0.189)	0.434** (0.190)	0.424** (0.190)	0.439** (0.190)	0.420** (0.189)

Continued on next slide...

Results (III) – SDQ index

Child social & behavioural difficulties (SDQM) score at 3 yrs

	GC	PC	HSGC	HSPC	NGC
Num children in hsd at W1	-0.193** (0.098)	-0.175* (0.098)	-0.181* (0.098)	-0.171* (0.098)	-0.185* (0.098)
Had Complications in Pregnancy	0.273 (0.168)	0.306* (0.168)	0.285* (0.167)	0.314* (0.168)	0.290* (0.168)
Disability/Chronic Illness	0.611** (0.262)	0.640** (0.264)	0.620** (0.263)	0.647** (0.263)	0.634** (0.265)
PGC was employed at W1	-0.419** (0.187)	-0.423** (0.188)	-0.418** (0.187)	-0.422** (0.188)	-0.420** (0.188)
PCG Health is Poor/Fair	0.973*** (0.348)	0.970*** (0.350)	0.968*** (0.351)	0.971*** (0.350)	0.962*** (0.348)
PCG has family history of poverty	0.650*** (0.214)	0.646*** (0.215)	0.644*** (0.215)	0.639*** (0.215)	0.635*** (0.215)
Rural dweller (REF: Urban)	-0.071 (0.165)	-0.070 (0.166)	-0.070 (0.165)	-0.072 (0.166)	-0.072 (0.165)
English is native language?(Yes=1)	-0.900*** (0.245)	-0.899*** (0.245)	-0.901*** (0.245)	-0.901*** (0.246)	-0.897*** (0.245)
gc	0.988*** (0.349)				
pc		0.461 (0.565)			
hsgc			1.315** (0.618)		
hspc				0.336 (0.964)	
ngc					0.766* (0.435)
npc					
nsgc					
nspc					
Constant	11.104*** (0.754)	11.156*** (0.754)	11.168*** (0.754)	11.154*** (0.755)	11.162*** (0.755)
N	4439	4439	4439	4439	4439
F-test	0.000	0.000	0.000	0.000	0.000
AIC	25922	25936	25928	25937	25931
R2	0.097	0.094	0.096	0.094	0.095

Note: Reference cat for marital status is 'Married', for Education is 'Secondary only', for Income is '1'
 * p<0.10, ** p<0.05, *** p<0.01

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