



Evaluating coping patterns in the Andromeda cohort and potential associations with breast cancer onset, unhealthy behaviours or other socio-demographic features

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Background

- ✓ The impact of psychological factors upon breast cancer (BC) incidence and prognosis is debated.
- ✓ **Psychological distress** is investigated for its potential association with cancer pathogenesis (e.g. hindrance to the immunologic system, hormonal disequilibrium, etc.) and/or the adoption of **at-risk behaviours** (e.g. smoking, alcohol, insufficient PA, unhealthy diet, drug addiction, etc.).
- ✓ The role of stress was especially evaluated among younger women.
- ✓ From literature, common emerging predictors of BC: emotional repression and prior/recent severe life events.
- ✓ Despite the supposed association between stress-related psychosocial factors and cancer incidence and/or prognosis, **findings need to be interpreted cautiously**, since publication bias is widespread, due to the lack of prospect studies, and difficulties in correctly applying standardized measurements.

Andromeda study



- Active from **2015** to **2017** in **Turin and Biella** (two northern Italian cities), recruiting women attending **BC screening**.
- **Primary aim** is to develop a risk-based stratification, integrating multiple (modifiable and non-) factors.
- The study included **26,640 women** from 46 to 69 years.
- As part of the study, **lifestyles** were investigated with a detailed self-reported questionnaire (LSQ) on diet, PA, and smoking habits, whose last section assessed **participants' psychological distress**.
- **Secondary aims:**
 - ✓ Describe the **patterns of coping strategies and distressful events** within the cohort;
 - ✓ Compare these patterns between women with or without a subsequent **BC diagnosis**;
 - ✓ Compare coping patterns considering **socio-demographic characteristics and lifestyles**.

Analyses:

- Each dimension was evaluated individually, and grouped in **two main patterns: “APPROACH”** and **“AVOIDING”**, following recent papers on coping patterns among BC-survivors.
- **Approach** pattern joined the [adaptive coping mechanisms](#) (active cope, emotional support, informational support, positive reframing, planning, and acceptance).
- **Avoidance** gathered scorings for [mal-adaptive coping approaches](#) (self-distraction, denial, substance abuse, venting, disengagement, and self-blame).
- **Religion** and **humor** stay as independent dimensions.
- The final item, investigating the occurrence of **previous traumatic events** was considered adopting the [endorsed 5-year cut-off](#).
- A lifestyle score was computed considering compliance to World Cancer Research Fund (WCRF) recommendations.

Please answer the questions considering the last year

Section 5 – PSYCHOLOGICAL DISTRESS

What do you generally do when you experience adverse events or stressful situations? Please answer by marking an X on the correspondent answer.

Legend:

- 1 = I haven't been doing this at all.
- 2 = I've been doing this a little bit
- 3 = I've been doing this a medium amount
- 4 = I've been doing this a lot.

5-1)	I've been turning to work or other activities to take my mind off things.	1	2	3	4
5-2)	I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
5-3)	I've been saying to myself "this isn't real."	1	2	3	4
5-4)	I've been using alcohol or other drugs to make myself feel better.	1	2	3	4
5-5)	I've been getting emotional support from others.	1	2	3	4
5-6)	I've been giving up trying to deal with it.	1	2	3	4
5-7)	I've been taking action to try to make the situation better.	1	2	3	4
5-8)	I've been refusing to believe that it has happened.	1	2	3	4
5-9)	I've been saying things to let my unpleasant feelings escape.	1	2	3	4
5-10)	I've been getting help and advice from other people.	1	2	3	4
5-11)	I've been using alcohol or other drugs to help me get through it.	1	2	3	4
5-12)	I've been trying to see it in a different light, to make it seem more positive.	1	2	3	4
5-13)	I've been criticizing myself.	1	2	3	4
5-14)	I've been trying to come up with a strategy about what to do.	1	2	3	4
5-15)	I've been getting comfort and understanding from someone.	1	2	3	4
5-16)	I've been giving up the attempt to cope	1	2	3	4
5-17)	I've been looking for something good in what is happening.	1	2	3	4
5-18)	I've been making jokes about it.	1	2	3	4
5-19)	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping	1	2	3	4
5-20)	I've been accepting the reality of the fact that it has happened	1	2	3	4
5-21)	I've been expressing my negative feelings	1	2	3	4
5-22)	I've been trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
5-23)	I've been trying to get advice or help from other people about what to do.	1	2	3	4
5-24)	I've been learning to live with it.	1	2	3	4
5-25)	I've been thinking hard about what steps to take.	1	2	3	4
5-26)	I've been blaming myself for things that happened.	1	2	3	4
5-27)	I've been praying or meditating.	1	2	3	4
5-28)	I've been making fun of the situation	1	2	3	4

Please answer the questions considering the last year

5-29) Do you think you (or persons around you) had traumatic experiences (e.g. grief, separation/divorce, work problems, health problems or people around you, etc.)?

YES NO

If YES,

In which year did you have the last traumatic experience? _____

In which year did you have the penultimate traumatic experience? _____

Questionnaire completeness within the cohort

- **13,577 (51.0%)** out of the entire cohort completed the coping questionnaire.
- **253 BC** occurred among women completing the questionnaire with **no difference in questionnaire compliance** by BC incidence ($p=0.597$).

Multiple factors seemed associated to questionnaire completion, e.g. **center of recruitment, age, years of education**, etc.

Predictors of questionnaire completeness

A logistic regression was performed for pointing out the emerging predictors of questionnaire compliance.

→ To be considered in following results interpretation

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Logistic regression              Number of obs   =   14,584
                                LR chi2(13)      =   605.61
                                Prob > chi2         =   0.0000
Log likelihood = -6874.5321      Pseudo R2       =   0.0422
    
```

cope_compl~e	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
center	2.539089	.1458327	16.22	0.000	2.268762	2.841624
age_cat2	.9218807	.0837956	-0.89	0.371	.7714425	1.101656
edu						
1	1.422088	.0751198	6.67	0.000	1.282221	1.577212
2	1.451878	.0943235	5.74	0.000	1.278294	1.649035
marital						
1	.9584054	.0876258	-0.46	0.642	.8011705	1.146499
2	.8796559	.0523725	-2.15	0.031	.7827704	.9885331
3	.8839633	.0783746	-1.39	0.164	.7429583	1.051729
Place_birth						
1	.6795683	.0940641	-2.79	0.005	.5180981	.8913622
2	.6172104	.0313586	-9.50	0.000	.5587097	.6818366
menopause	1.005054	.0663286	0.08	0.939	.8831086	1.143837
children	1.039053	.0653122	0.61	0.542	.9186146	1.175282
HRT	1.034851	.0638193	0.56	0.579	.9170318	1.167808
work	1.241284	.0576293	4.66	0.000	1.133319	1.359533
_cons	2.828925	.3369883	8.73	0.000	2.239877	3.572881

Coping patterns within Andromeda - cohort

	N=13,577
AVOIDING	21.50±4.08
APPROACH	31.19±6.01
HUMOR	3.41±1.53
RELIGION	3.96±1.97

PREVIOUS SEVERE LIFE-EVENTS
Yes: 10,996 (81.6%)

TIME AT MOST RECENT EVENT
5 year cut-off: 6,396 (58.2%)

Variable	Obs	Mean	Std. Dev.	Min	Max
selfdistrac~n	13,577	4.538705	1.522032	2	8
denial	13,577	2.819548	1.249393	2	8
disengagem~t	13,577	2.972674	1.111322	2	8
venting	13,577	4.1792	1.46399	2	8
selfblame	13,577	4.827797	1.560256	2	8
substance	13,577	2.159903	.6790411	2	8

Variable	Obs	Mean	Std. Dev.	Min	Max
active	13,577	5.933638	1.577389	2	8
emotional	13,577	4.276202	1.602063	2	8
instrumental	13,577	4.409221	1.598522	2	8
positive	13,577	5.079178	1.658265	2	8
planning	13,577	5.87442	1.568437	2	8
acceptance	13,577	5.621934	1.582731	2	8

Differences in coping patterns by BC occurrence

- ✓ No associations were found between **AVOIDANCE patterns** and BC occurrence ($p=0.853$)
- ✓ No emerging differences in any of the avoidance sub-dimensions ($p>0.10$)
- ✓ No significant differences in **APPROACH patterns**, even if a slight trend was evident for these adaptive mechanisms (cases vs. controls: 30.65 ± 6.04 vs. 31.20 ± 6.01 ; $p=0.147$)
- ✓ No differences in any of the approach sub-dimensions ($p>0.10$)
- ✓ No differences in the two independent coping strategies of Religion and Humor.
- ✓ No differences in the **rate of prior severe life events** ($p=0.831$), even considering the **5-year cut-off** ($p=0.292$)

Differences in stress management by healthy/unhealthy lifestyles

Women with higher coping approach presented a higher compliance to World Cancer Research Funds – WCRF recommendations ($p < 0.001$)

This difference was preserved in some sub-dimensions: **active, planning, acceptance**

Comparison of approach by score_wcrf~t (Bonferroni)

Row Mean- Col Mean	1	2	3
2	.646434 0.000		
3	.765902 0.000	.119468 1.000	
4	1.41758 0.000	.77115 0.000	.651682 0.000

The framework is less clear for **avoiding pattern** ($p = 0.01$), even if women with more healthy behaviors tended to have a lower avoidance score

This difference was evident in some sub-dimensions: **disengagement, substance, denial**

Comparison of avoidance by score_wcrf~t (Bonferroni)

Row Mean- Col Mean	1	2	3
2	-.037323 1.000		
3	-.211975 0.332	-.174652 0.589	
4	-.271835 0.031	-.234513 0.062	-.05986 1.000

No differences in lifestyles emerged by prior severe life events ($p = 0.359$)

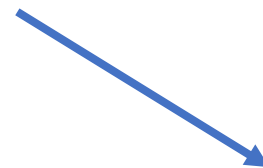
Further differences by healthy/unhealthy lifestyles - SMOKING

- ✓ AVOIDANCE pattern was higher in women currently smoking (21.72±4.17 vs. 41.42±4.04; p<0.001)
- ✓ This significant difference was maintained for some sub-dimensions, as: **substance, denial, and self-distraction**.
- ✓ APPROACH pattern was lower in women currently smoking (30.84±6.03 vs. 31.27±5.97; p<0.001)
- ✓ This significant difference was maintained for some sub-dimensions, as: **instrumental and emotional support**.
- ✓ Additional differences emerged for the two independent coping dimensions of **humor and religion**.
- ✓ These stress management differences were evident even considering **former smokers** as an independent group.
- ✓ Prior **severe life events** were more frequent among smokers (83.8% vs. 81.1%; p<0.001)

Differences in coping by socio-demographic features

Significant differences emerged by age, with a more frequent adaptive pattern among younger women.

Similarly, differences were evident by educational level, especially considering the APPROACH modalities ($p < 0.001$), more frequent increasing education (as years of education).



Comparison of approach by edu
(Bonferroni)

Row Mean- Col Mean	0	1
1	1.32062 0.000	
2	2.57978 0.000	1.25916 0.000

This difference was confirmed in all the adaptive sub-dimensions

Discussions and conclusions

- ✓ Stress management can play a role in the **multi-factorial onset of different cancer sub-types**.
- ✓ This potential association was largely studied for BC, even if with **inconsistent results**.
- ✓ To assess psychological distress **multiple evaluation tools** are known, and most of these scales are scarcely standardized or requiring a strong personal commitment for their completion

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Life events, coping and breast cancer: state of the art

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PERGAMON

Social Science & Medicine 58 (2004) 1511–1522

Psychobiological mechanisms of socioeconomic differences in health[☆]

M. Kristenson^{a,*}, H.R. Eriksen^b, J.K. Sluiter^c, D. Starke^d, H. Ursin^b

Dossier: Stress

Cancer Causes Control (2009) 20:437–447
DOI 10.1007/s10552-008-9257-z

ORIGINAL PAPER

Effects of life event stress and social support on the odds of a ≥ 2 cm breast cancer

Anne Krickler · Melanie Price · Phyllis E
Chris Goumas · Jane E. Armes · Bruce I



ELSEVIER

Journal of Psychosomatic Research 49 (2000) 169–181

Journal of
Psychosomatic
Research

Epidemiological evidence for a relationship between life events, coping style, and personality factors in the development of breast cancer

Phyllis N. Butow^{a,*}, Janet E. Hiller^b, Melanie A. Price^a, Sarah V. Thackway^c, Anne Krickler^c, Christopher C. Tennant^a

SOCIAL
SCIENCE
&
MEDICINE

www.elsevier.com/locate/socscimed

REVIEW

www.nature.com/clinicalpractice/onc

Do stress-related psychosocial factors contribute to cancer incidence and survival?

Yoichi Chida^{*}, Mark Hamer, Jane Wardle and Andrew Steptoe

Discussions and conclusions

- ✓ Differences in **compliance to the questionnaire**. However, no differences in completeness were retrieved by **BC onset**.
- ✓ **No differences in coping patterns accounting for BC** were retrieved among our cohort. Similarly, no differences were highlighted concerning **the experience of adverse life events**, in contrast with previous investigations.
- ✓ The **potential role of coping strategies on the adoption of at-risk behaviors** (unhealthy lifestyle score, smoking) was suggested, with more at-risk habits associated to higher avoiding and lower approach scoring. Previous experiences confirmed these associations, especially accounting for single unhealthy/healthy habits e.g. physical inactivity, alcohol intake, etc.
- ✓ Coping patterns varied considering **some socio-demographic features** (i.e. education), related to potential **health inequalities**. Previous experiences confirmed this association, for example considering socio-economic factors.

Discussions and conclusions

STRENGTHS

Use of the **standardized** brief-COPE scale + additional assessments on previous severe life events.

Prospective study **design**, limiting recall biases.
Definition of **comprehensive lifestyle scores**, as the compliance to WCRF recommendations.

LIMITATIONS

Constrained **completeness** of the entire questionnaire (around half of initial participants)

Too **general questions on adverse life events** (any potentially stressful event, regardless its seriousness).

- ✓ The retrieved association between coping and lifestyles is particularly interesting, since most of these habits are **common risk/protective factors for multiple non-communicable diseases**.
- ✓ Stress and lifestyles can play a synergic effect on health status, potentially leading to cumulative effects.
- ✓ Since both lifestyles and stress management can be modified, **comprehensive interventions** seems important.
- ✓ **Cancer screening** can reveal as important opportunities to catch widespread cancer primary prevention needs. Similar interventions are **challenging**, often burdened by multiple shortcomings. In this regard, a **psychological counselling** seems important as healthy behavior promotion to be effective needs to be coupled with strategies to support empowerment and individual resources.

THANKS FOR YOUR ATTENTION!!!

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