

Errata

Hearing-related symptoms among women - Occurrence and risk in relation to occupational noise and stressful working conditions

Sofie Fredriksson (2018). ISBN 978-91-7833-041-6 (print).

Paper III

- **Page 4, figure 1:** The number of subjects in “subpopulation currently working” should read “n 4226” for preschool cohort and “n 3263” for population controls, not n 3277 and n 2844.
- **Page 9, table 1:** Table 1 should be replaced in full with table 1 in this errata sheet. Values have been corrected for the variables “Effort-reward imbalance (ERI)”, “Emotional demands (COPSOQ)” on rows 23-24. These values were erroneous due to incorrect computation of variables from the questionnaire data. In effect, the ERI variable was reversed (those defined as having stressful working conditions should in fact have been defined as not having stressful working conditions and vice versa). For the COPSOQ variable, those reporting low emotional demands on only one of the two questionnaire items were incorrectly given missing values, but should have been categorised as having low emotional demands. Consequently, corrections have also been made in values for the categories of the variable “Exposure strata among currently working” on rows 26-29. Descriptions on row 5, 7 and 20 have also been corrected.
- **Page 12, table 4:** Table 4 should be replaced in full with table 4 in this errata sheet. The number of subjects, prevalence, risk ratios and 95% CIs have been corrected due to the error in the ERI and COPSOQ variables described above, which affected the exposure strata variable used in table 4.

Paper IV

- **Page 2 line 6:** Should read “individuals” not “women”.
- **Page 8, line 26:** Should read “(95% CI: 2.4–2.9)” not “(95% CI: 2.–2.9)”.
- Additional spelling errors are not listed in this errata sheet.

Thesis frame

- **English abstract, line 32-35:** Should read “The risk of hyperacusis was pronounced among preschool teachers who reported exposure to loud noise and stressful working conditions. The risk of sound-induced auditory fatigue was pronounced among those defined as unexposed to noise or stress”. The current sentences are to be deleted.
- **Swedish abstract second page, line 11-14:** Should read “Den relativa risken för ljudöverkänslighet var särskilt hög bland de som rapporterade buller och stress. Den relativa risken för ljudtrötthet var förhöjd bland de som definierats som oexponerade för buller och stress”. The current sentences are to be deleted.
- **Page 27, table 2:** Row 5 column 4, should read “log-binomial regression” not “binomial regression”.
- **Page 32 line 12:** Should read “n 4226” not “n 3277”.
- **Page 32 line 27:** Should read “n 3263” not “n 2844”.
- **Page 33, figure 4:** The number of subjects in “subpopulation currently working” should read “n 4226” for preschool cohort and “n 3263” for population controls, not n 3277 and n 2844.
- **Page 39 line 15:** The following sentence should be added “In Paper III a combination of the two noise items were used in the exposure stratified analysis. Noise exposure was then defined as reporting “25% of time” or more on both items or “50% of time” or more on one item.
- **Page 62, table 9:** Proportion of noise annoyance on row 4 should read “49” not “58”.
- **Page 68 line 20-21:** Should read “[...] emotional demands and effort-reward imbalance”.
- **Page 68 line 23-25:** Should read “[...] the relative risk of hyperacusis was highest among those reporting current exposure to both occupational noise and stressful working conditions, RR 1.8, 95% CI: 1.6–2.1 (figure 12)”.
- **Page 68 line 28-29:** Should read “[...] the communication-intense noise environment in combination with stressful working conditions found in preschools are more important risk factors for hyperacusis than noise and stress in other occupations”.
- **Page 70 line 20-21:** Should read “[...] sound-induced auditory fatigue was slightly pronounced within the stress only strata (RR 1.6, 95% CI: 1.4–1.8), but less so than in the strata defined as unexposed to noise and stress (RR 2.7, 95% CI: 2.0–3.6) [...]”.
- **Page 71 line 17:** Should read “[...] both emotional demands and effort reward imbalance [...]”.
- **Page 72, table 14:** Table 14 should be replaced in full with table 14 in this errata sheet. Values have been corrected for the variables “Effort-reward imbalance (ERI)”, “Emotional demands (COPSOQ)” on row 6–7.
- **Page 73, figure 12 and figure 13:** The figures should be replaced with figure 12 and figure 13 in this errata sheet.
- **Page 83 line 14-16:** Should read “[...] sound-induced auditory fatigue ($\beta=0.27$) and hyperacusis ($\beta=0.27$). The direct effect of noise was lower for difficulty perceiving speech ($\beta=0.20$), hearing loss ($\beta=0.17$) and tinnitus ($\beta=0.10$) [...]”.
- **Page 83 line 24:** should read “0.03” not “0.04”, **line 26:** should read “0.02” not “0.03”, **line 29:** should read “0.33” not “0.28”, **line 32:** should read “0.06” not “0.07”.

The following table should replace Table 1 in Paper III, page 9 (underlining signifies changes):

Table I. Demographic data on female preschool teachers and randomly selected women as population controls.

	Preschool cohort (n= 4718)				Population controls (n= 4122)				p-value ^a
	Mean (IQR)	n	%	(95% CI)	Mean (IQR)	n	%	(95% CI)	
Age in years	45 (38–53)				48 (39–57)				<.0001
Employment status (currently working)		4265/4714	90	(90–91)		3310/4114	80	(79–82)	<.0001
Highest educational level (university) ^b		4718/4718	100	-		2188/4089	54	(52–55)	-
Family monthly income (≥30000 SEK)		3804/4653	82	(81–83)		2902/4047	72	(70–73)	<.0001
Education and income combined (<u>mutually exclusive categories</u>)									<.0001
University education and ≥30000 SEK		3804/4653	82	(81–83)		1774/4027	44	(43–46)	
<u>No university education and ≥30000 SEK, or, University education and <30000 SEK</u>		849/4653	18	(17–19)		1528/4027	38	(36–39)	
Lower than university education and <30000 SEK		0/4653	0	-		725/4027	18	(17–19)	
Smoking (ever smoked daily)		1213/4703	26	(25–27)		1591/4089	39	(37–40)	<.0001
Family history of hearing loss (< age 55)		881/4702	19	(18–20)		755/4100	18	(17–20)	0.698
Ear infections (recurrent or prolonged)		728/4690	16	(14–17)		580/4092	14	(13–15)	0.077
Tympanostomy tube (ever)		191/3351	6	(5–6)		149/2743	5	(5–6)	0.651
Leisure noise exposure									
Noisy leisure activities (≥month or more)		1179/4705	25	(24–26)		1199/4089	29	(28–31)	<.0001
Hearing protection leisure time (always or often) ^c		208/1164	18	(16–20)		233/1182	20	(17–22)	0.253
Loud music in headphones (≥month, ≥75% vol.)		358/2695	13	(12–15)		460/2458	19	(17–20)	<.0001
Occupational noise exposure, current work									
Loud noise, can't hear conversation (≥25% time)		3368/4515	75	(73–76)		1176/3688	32	(30–33)	<.0001
Loud noise, have to raise own voice (≥25% time)		3376/4517	75	(73–76)		1078/3689	29	(28–31)	<.0001
Hearing protection <u>at work</u> (always or often)		123/4521	3	(2–3)		170/3698	5	(4–5)	<.0001
Changed job/workplace due to noise (ever)		312/4685	7	(6–7)		72/4034	2	(1–2)	<.0001
Stressful working conditions									
Effort-reward imbalance (ERI) (ratio >1)		<u>3725/4684</u>	<u>80</u>	<u>(78–81)</u>		<u>2383/4012</u>	<u>59</u>	<u>(58–61)</u>	<.0001
Emotional demands, COPSOQ (often or always)		<u>1699/4663</u>	<u>36</u>	<u>(35–38)</u>		<u>919/3985</u>	<u>23</u>	<u>(22–24)</u>	<.0001
Exposure strata among currently working ^d									<.0001
<u>Unexposed to noise and stress</u>		<u>384/4226</u>	<u>9</u>	<u>(8–10)</u>		<u>919/3263</u>	<u>28</u>	<u>(27–30)</u>	
Stress only (ERI or COPSOQ)		<u>835/4226</u>	<u>20</u>	<u>(19–21)</u>		<u>1494/3263</u>	<u>46</u>	<u>(44–48)</u>	
Noise only (exposed ≥25% of time)		<u>294/4226</u>	<u>7</u>	<u>(6–8)</u>		<u>163/3263</u>	<u>5</u>	<u>(4–6)</u>	
Both noise and stress		<u>2713/4226</u>	<u>64</u>	<u>(63–66)</u>		<u>687/3263</u>	<u>21</u>	<u>(20–22)</u>	

^a p-values based on non-parametric test of difference in medians or chi-square test of difference in proportions between the two cohorts.

^b All preschool teachers have a university degree and data was obtained from national registry. For controls, the proportion reporting university as the highest attained education level are shown. The rest had compulsory schooling or lower.

^c Proportion of non-missing data among those reporting noisy leisure activities.

^d Exclusive categories among currently working, excluding individuals with data missing for noise or stress exposure.

IQR: Inter-quartile range.

The following table should replace Table 4 in Paper III, page 12 (underlining signifies changes):

Table 4. 2013–2014 year prevalence of hearing-related symptoms and risk ratios in relation to occupational exposure.

	Prevalence (%)				Risk ratio (RR) ^b (preschool/control)					
	Preschool cohort (n= 4226) ^a			Population controls (n= 3263) ^a			Crude		Adjusted ^c	
	n	%	(95% CI)	n	%	(95% CI)	RR	(95% CI)	RR	(95% CI)
Hearing loss										
Unexposed <u>to noise and stress</u>	<u>55/378</u>	<u>15</u>	<u>(11–18)</u>	<u>96/913</u>	<u>11</u>	<u>(9–13)</u>	<u>1.4</u>	<u>(1.0–1.9)</u>	<u>1.6</u>	<u>(1.1–2.2)</u>
Noise only	<u>60/293</u>	<u>20</u>	<u>(16–25)</u>	<u>30/160</u>	<u>19</u>	<u>(13–25)</u>	<u>1.1</u>	<u>(0.7–1.6)</u>	<u>1.3</u>	<u>(0.8–2.2)</u>
Stress only	<u>107/829</u>	<u>13</u>	<u>(11–15)</u>	<u>189/1480</u>	<u>13</u>	<u>(11–14)</u>	<u>1.0</u>	<u>(0.8–1.3)</u>	<u>1.2</u>	<u>(0.98–1.6)</u>
Both noise and stress	<u>572/2692</u>	<u>21</u>	<u>(20–23)</u>	<u>131/674</u>	<u>19</u>	<u>(16–22)</u>	<u>1.1</u>	<u>(0.9–1.3)</u>	<u>1.4</u>	<u>(1.1–1.7)</u>
All	<u>794/4192</u>	<u>19</u>	<u>(18–20)</u>	<u>446/3227</u>	<u>14</u>	<u>(13–15)</u>	<u>1.4</u>	<u>(1.2–1.5)</u>	<u>1.7</u>	<u>(1.5–1.9)</u>
Tinnitus										
Unexposed <u>to noise and stress</u>	<u>51/382</u>	<u>13</u>	<u>(10–17)</u>	<u>76/915</u>	<u>8</u>	<u>(7–10)</u>	<u>1.6</u>	<u>(1.2–2.3)</u>	<u>2.1</u>	<u>(1.4–3.0)</u>
Noise only	<u>48/294</u>	<u>16</u>	<u>(12–21)</u>	<u>17/161</u>	<u>11</u>	<u>(6–15)</u>	<u>1.5</u>	<u>(0.9–2.6)</u>	<u>1.6</u>	<u>(0.8–2.9)</u>
Stress only	<u>106/831</u>	<u>13</u>	<u>(10–15)</u>	<u>181/1487</u>	<u>12</u>	<u>(11–14)</u>	<u>1.0</u>	<u>(0.8–1.3)</u>	<u>1.2</u>	<u>(0.9–1.5)</u>
Both noise and stress	<u>565/2696</u>	<u>21</u>	<u>(19–22)</u>	<u>130/683</u>	<u>19</u>	<u>(16–22)</u>	<u>1.1</u>	<u>(0.9–1.3)</u>	<u>1.4</u>	<u>(1.2–1.7)</u>
All	<u>770/4203</u>	<u>18</u>	<u>(17–19)</u>	<u>404/3246</u>	<u>12</u>	<u>(11–14)</u>	<u>1.5</u>	<u>(1.3–1.6)</u>	<u>1.8</u>	<u>(1.6–2.0)</u>
Difficulty perceiving speech										
Unexposed <u>to noise and stress</u>	<u>101/380</u>	<u>27</u>	<u>(22–31)</u>	<u>155/917</u>	<u>17</u>	<u>(14–19)</u>	<u>1.6</u>	<u>(1.3–2.0)</u>	<u>1.6</u>	<u>(1.3–2.0)</u>
Noise only	<u>128/293</u>	<u>44</u>	<u>(38–49)</u>	<u>46/162</u>	<u>28</u>	<u>(21–35)</u>	<u>1.5</u>	<u>(1.2–2.0)</u>	<u>1.4</u>	<u>(1.0–2.0)</u>
Stress only	<u>281/829</u>	<u>34</u>	<u>(31–37)</u>	<u>369/1491</u>	<u>25</u>	<u>(23–27)</u>	<u>1.4</u>	<u>(1.2–1.6)</u>	<u>1.5</u>	<u>(1.3–1.7)</u>
Both noise and stress	<u>1464/2692</u>	<u>54</u>	<u>(53–56)</u>	<u>313/684</u>	<u>46</u>	<u>(42–49)</u>	<u>1.2</u>	<u>(1.1–1.3)</u>	<u>1.3</u>	<u>(1.1–1.4)</u>
All	<u>1974/4194</u>	<u>47</u>	<u>(46–49)</u>	<u>883/3254</u>	<u>27</u>	<u>(26–29)</u>	<u>1.7</u>	<u>(1.6–1.9)</u>	<u>1.9</u>	<u>(1.7–2.0)</u>
Hyperacusis										
Unexposed <u>to noise and stress</u>	<u>67/383</u>	<u>17</u>	<u>(14–21)</u>	<u>93/915</u>	<u>10</u>	<u>(8–12)</u>	<u>1.7</u>	<u>(1.3–2.3)</u>	<u>1.7</u>	<u>(1.2–2.3)</u>
Noise only	<u>76/292</u>	<u>26</u>	<u>(21–31)</u>	<u>26/162</u>	<u>16</u>	<u>(10–22)</u>	<u>1.6</u>	<u>(1.1–2.4)</u>	<u>1.3</u>	<u>(0.8–2.1)</u>
Stress only	<u>192/834</u>	<u>23</u>	<u>(20–26)</u>	<u>231/1488</u>	<u>16</u>	<u>(14–17)</u>	<u>1.5</u>	<u>(1.2–1.8)</u>	<u>1.5</u>	<u>(1.2–1.8)</u>
Both noise and stress	<u>1315/2702</u>	<u>49</u>	<u>(47–51)</u>	<u>191/683</u>	<u>28</u>	<u>(25–31)</u>	<u>1.7</u>	<u>(1.5–2.0)</u>	<u>1.8</u>	<u>(1.6–2.1)</u>
All	<u>1650/4211</u>	<u>39</u>	<u>(38–41)</u>	<u>541/3248</u>	<u>17</u>	<u>(15–18)</u>	<u>2.4</u>	<u>(2.2–2.6)</u>	<u>2.4</u>	<u>(2.2–2.6)</u>
Sound-induced auditory fatigue										
Unexposed <u>to noise and stress</u>	<u>98/384</u>	<u>26</u>	<u>(21–30)</u>	<u>88/915</u>	<u>10</u>	<u>(8–12)</u>	<u>2.7</u>	<u>(2.0–3.4)</u>	<u>2.7</u>	<u>(2.0–3.6)</u>
Noise only	<u>192/292</u>	<u>66</u>	<u>(60–71)</u>	<u>59/163</u>	<u>36</u>	<u>(29–44)</u>	<u>1.8</u>	<u>(1.5–2.3)</u>	<u>1.5</u>	<u>(1.2–2.0)</u>
Stress only	<u>371/832</u>	<u>45</u>	<u>(41–48)</u>	<u>371/1488</u>	<u>25</u>	<u>(23–27)</u>	<u>1.8</u>	<u>(1.6–2.0)</u>	<u>1.6</u>	<u>(1.4–1.8)</u>
Both noise and stress	<u>2369/2707</u>	<u>88</u>	<u>(86–89)</u>	<u>464/685</u>	<u>68</u>	<u>(64–71)</u>	<u>1.3</u>	<u>(1.2–1.4)</u>	<u>1.3</u>	<u>(1.2–1.4)</u>
All	<u>3030/4215</u>	<u>72</u>	<u>(71–73)</u>	<u>982/3251</u>	<u>30</u>	<u>(29–32)</u>	<u>2.4</u>	<u>(2.3–2.5)</u>	<u>1.8</u>	<u>(1.7–1.9)</u>

^a Including the corrected number in the subsample of women currently working with data on occupational exposures.

^b Bold indicates significant risk ratio estimate from log-binomial regression ($p < 0.05$).

^c Adjusted for age, socioeconomic status, smoking, hearing protection at work and leisure noise index.

The following table should replace table 14 in the thesis frame, page 72 (underlining signifies changes):

Table 14. Selected descriptive variables relating to the work-environment reported by the preschool cohort and population controls (Paper III).

	Preschool cohort		Population controls	
	%	(95% CI)	%	(95% CI)
Exposed to loud noise at work ($\geq 25\%$ of time)				
Difficulty hearing a conversation	75	(73–76)	32	(30–33) *
Have to raise own voice	75	(73–76)	29	(28–31) *
Wear hearing protection at work (often/always)	3	(2–3)	5	(4–5) *
Noise annoyance (rather, very, extremely)‡	70	(68–71)	27	(25–28) *
Effort-reward imbalance (ratio >1)	<u>80</u>	<u>(78–81)</u>	<u>59</u>	<u>(58–61) *</u>
Emotional demands (often or always)	<u>36</u>	<u>(35–38)</u>	<u>23</u>	<u>(22–24) *</u>

* Difference were significant ($p < 0.001$) as assessed by the chi-square test.

‡ Additional data, not included in Paper III.

The following figures should replace figure 12 and figure 13 in the thesis frame, page 73:

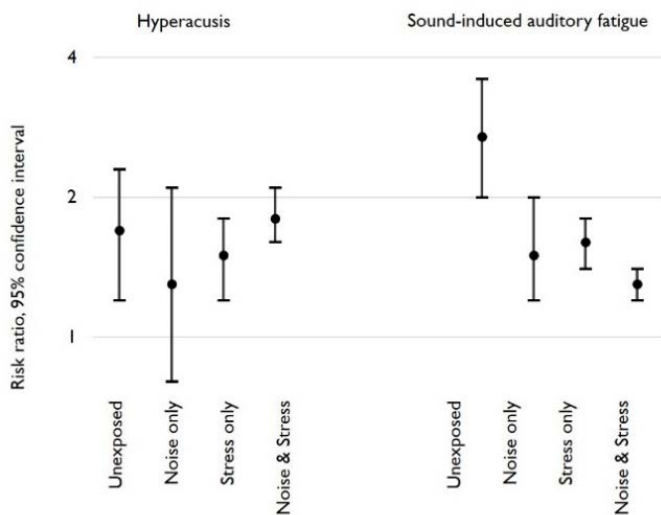


Figure 12. Relative risk of hyperacusis and sound-induced auditory fatigue within strata of current exposure to occupational noise and stressful working conditions (Paper III).

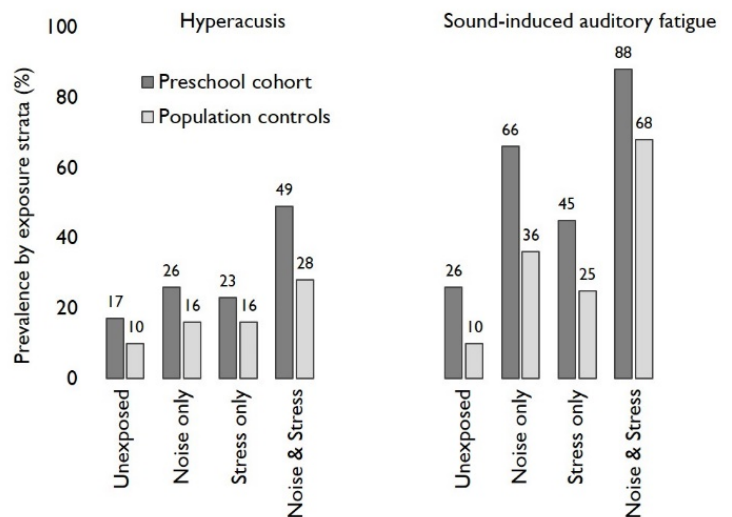


Figure 13. Prevalence of hyperacusis and sound-induced auditory fatigue within strata of current exposure to occupational noise and stressful working conditions (Paper III).