**Reducing Exposure to Ultraviolet Radiation from the Sun and Indoor Tanning:**

**A Meta-Analysis**

**SUPPLEMENTAL MATERIALS**

Table S1

*Search Terms Used for Each Database*

|  |
| --- |
| **Cochrane** (drop down = title,abstract,keyword) |
| ([mh “skin neoplasms”] OR [mh melanoma] OR [mh “carcinoma, basal cell”] OR [mh “carcinoma, squamous cell”] OR [mh “nevi and melanomas”] OR [mh “keratosis, actinic”] OR [mh “skin physiological processes”] OR [mh sunburn] OR ((skin OR cutaneous) AND (carcinoma OR disease OR melanoma OR neoplasm OR cancer OR tumor OR tumour OR pigmentation)) OR skin neoplasm OR melanoma OR non melanoma OR non melanoma basal cell carcinoma OR non melanoma squamous cell carcinoma OR malignant melanoma OR nevi and melanomas OR actinic keratos\* OR sunburn OR sun damage OR skin darkening OR skin cancer OR skin tumor OR skin tumour OR tan OR tanning OR tanner OR suntan) |
| AND |
| ([mh “Ultraviolet rays”] OR [mh sunlight] OR [mh sunbathing] OR [mh “radiation, ionizing”] OR [mh “sunscreening agents”] OR [mh “zinc oxide”] OR [mh PABA] OR [mh celecoxib] OR [mh acitretin]OR ultraviolet rays OR sunbathing OR suntan OR UV exposure OR UVR exposure OR ultraviolet radiation exposure OR Sun exposure OR solar rays OR ultraviolet OR UV OR UVR OR ultraviolet radiation OR solar protective OR solar protection OR sun protective OR sun protection OR UV protective OR UV protection OR protective behaviors OR sun protective behaviors OR skin protective OR skin cancer prevent\* OR skin cancer prevention OR preventative OR sunscreen OR sunblock OR intervention OR tan OR tanning OR tanner OR skin pigmentation OR sunbather OR sunburn OR solarium OR sunbed OR sunlamp OR Ionizing radiation OR Ultraviolet A OR Ultraviolet B OR Ultraviolet C OR Sun Avoidance OR Broad Spectrum OR Zinc Oxide OR Avobenzone OR Ecamsule OR Oxybenzone OR Titanium Dioxide OR PABA OR Celecoxib OR Acitretin OR sun safe OR safe sun OR (skin cancer AND intervention) OR (sun exposure AND intervention) OR (UV exposure AND intervention) OR (skin cancer AND prevention) OR (sun exposure AND prevention) OR (UV exposure AND prevention) OR ((UV OR UVR OR ultraviolet OR sun OR solar) AND (exposure OR protection OR protective OR radiation OR rays)) OR ((skin AND cancer) AND (prevention OR preventative OR prevention))) |
| AND |
|  | ([mh “randomized controlled trial”] OR [mh "randomized controlled trials as topic"] OR [mh “Double-Blind Method”] OR ((randomised OR randomized) AND (trial)) OR ((single OR double OR triple OR treble) AND (blind\* OR mask\*)) OR ((control OR controlled) AND (experimental OR intervention)) OR randomly assigned OR random assignment OR randomization OR randomisation OR randomized OR randomised OR blindly randomized OR blindly randomised) |
| OR |
| ("randomized controlled trial") |

|  |
| --- |
| **EMBASE** (mapping drop down=‘search as broadly as possible’) |
|  (‘skin tumor’/exp OR ‘skin cancer’/exp OR ‘melanoma’/exp OR ‘melanoma skin cancer’/exp OR ‘non melanoma skin cancer’/exp OR ‘skin carcinoma’/exp OR ‘basal cell carcinoma’/exp OR ‘squamous cell carcinoma’/exp OR 'functions of the skin and its appendages'/exp OR ‘skin color’/exp OR ‘skin pigmentation’/exp OR ‘sunburn’/exp OR ‘skin disease’/exp OR ‘skin neoplasm’:ab,ti OR ‘skin neoplasms’:ab,ti OR ‘melanoma’:ab,ti OR ‘melanomas’:ab,ti OR ‘non melanoma’:ab,ti OR ‘non melanoma skin cancer’:ab,ti OR ‘non melanoma basal cell carcinoma’:ab,ti OR ‘non melanoma squamous cell carcinoma’:ab,ti OR ‘malignant melanoma’:ab,ti OR ‘nevi and melanomas’:ab,ti OR ‘actinic keratosis’:ab,ti OR ‘actinic keratoses’:ab,ti OR ‘sunburn’:ab,ti OR ‘skin tumor’:ab,ti OR ‘skin tumour’:ab,ti OR ‘skin tumors’:ab,ti OR ‘skin tumours’:ab,ti OR ‘skin disease’:ab,ti OR ‘skin diseases’:ab,ti OR ‘sun damage’:ab,ti OR ‘skin darkening’:ab,ti OR ‘skin color’:ab,ti OR ‘skin cancer’:ab,ti OR ‘skin cancers’:ab,ti OR ‘tan’:ab,ti OR ‘tanning’:ab,ti OR ‘tanner’:ab,ti OR ‘suntan’:ab,ti OR ((‘skin’:ab,ti OR ‘cutaneous’:ab,ti) AND (‘tumor’:ab,ti OR ‘tumour’:ab,ti OR ‘tumors’:ab,ti OR ‘tumours’:ab,ti OR ‘cancer’:ab,ti OR ‘cancers’:ab,ti OR ‘neoplasm’:ab,ti OR ‘neoplasms’:ab,ti OR ‘carcinoma’:ab,ti OR ‘carcinomas’:ab,ti OR ‘disease’:ab,ti OR ‘diseases’:ab,ti OR ‘melanoma’:ab,ti OR ‘melanomas’:ab,ti OR ‘pigmentation’:ab,ti OR ‘pigmentations’:ab,ti))) |
| AND |
| (‘ultraviolet radiation’/exp OR ‘sunlight’/exp OR ‘sunbathing’/exp OR ‘suntan’/exp OR ‘sunscreen’/exp OR ‘sunlight protection’/exp OR ‘ionizing radiation’/exp OR ‘Ultraviolet A’/exp OR ‘Ultraviolet B’/exp OR ‘Ultraviolet C’/exp OR ‘sunscreen’/exp OR ‘Zinc Oxide’/exp OR ‘Avobenzone’/exp OR ‘Celecoxib’/exp OR ‘etretin’/exp OR ‘ultraviolet rays’:ab,ti OR ‘ultraviolet radiation’:ab,ti OR ‘sunbathing’:ab,ti OR ‘suntan’:ab,ti OR ‘sunscreen’:ab,ti OR ‘sunscreens’:ab,ti OR ‘sunblock’:ab,ti OR ‘sunblocks’:ab,ti OR ‘sunscreening agents’:ab,ti OR ‘sunlight protection’:ab,ti OR ‘UV exposure’:ab,ti OR ‘UVR exposure’:ab,ti OR ‘ultraviolet radiation exposure’:ab,ti OR ‘Sun exposure’:ab,ti OR ‘solar rays’:ab,ti OR ‘ultraviolet’:ab,ti OR ‘UV’:ab,ti OR ‘UVR’:ab,ti OR ‘solar protective’:ab,ti OR ‘solar protection’:ab,ti OR ‘sun protective’:ab,ti OR ‘sun protection’:ab,ti OR ‘UV protective’:ab,ti OR ‘UV protection’:ab,ti OR ‘protective behaviors’:ab,ti OR ‘sun protective behaviors’:ab,ti OR ‘skin protective’:ab,ti OR ‘skin cancer prevent’:ab,ti OR ‘skin cancer prevention’:ab,ti OR ‘tan’:ab,ti OR ‘tanning’:ab,ti OR ‘tanner’:ab,ti OR ‘skin pigmentation’:ab,ti OR ‘sunbather’:ab,ti OR ‘sunburn’:ab,ti OR ‘solarium’:ab,ti OR ‘sunbed’:ab,ti OR ‘sunlamp’:ab,ti OR ‘Ionizing radiation’:ab,ti OR ‘Ultraviolet A’:ab,ti OR ‘Ultraviolet B’:ab,ti OR ‘Ultraviolet C’:ab,ti OR ‘Sun Avoidance’:ab,ti OR ‘Broad Spectrum’:ab,ti OR ‘Zinc Oxide’:ab,ti OR ‘Avobenzone’:ab,ti OR ‘Ecamsule’:ab,ti OR ‘Oxybenzone’:ab,ti OR ‘Titanium Dioxide’:ab,ti OR ‘PABA’:ab,ti OR ‘Celecoxib’:ab,ti OR ‘etretin’:ab,ti OR ‘sun safe’:ab,ti OR ‘safe sun’:ab,ti OR (‘skin cancer’:ab,ti AND ‘intervention’:ab,ti) OR (‘sun exposure’:ab,ti AND ‘intervention’:ab,ti) OR (‘UV exposure’:ab,ti AND ‘intervention’:ab,ti) OR (‘skin cancer’:ab,ti AND ‘prevention’:ab,ti) OR (‘sun exposure’:ab,ti AND ‘prevention’:ab,ti) OR (‘UV exposure’:ab,ti AND ‘prevention’:ab,ti) OR ((‘UV’:ab,ti OR ‘UVR’:ab,ti OR ‘ultraviolet’:ab,ti OR ‘sun’:ab,ti OR ‘solar’:ab,ti) AND (‘exposure’:ab,ti OR ‘protection’:ab,ti OR ‘protective’:ab,ti OR ‘radiation’:ab,ti OR ‘rays’:ab,ti)) OR ((‘skin’:ab,ti AND ‘cancer’:ab,ti) AND (‘prevention’:ab,ti OR ‘preventative’:ab,ti OR ‘prevention’:ab,ti))) |
| AND |
| (‘randomized controlled trial’/exp OR ‘randomized controlled trials (topic)’/exp OR ‘double blind procedure’/exp OR ((‘randomised’:ab,ti OR ‘randomized’:ab,ti) AND (‘trial’:ab,ti OR ‘trials’:ab,ti)) OR ((‘single’:ab,ti OR ‘double’:ab,ti OR ‘doubled’:ab,ti OR ‘triple’:ab,ti OR ‘tripled’:ab,ti OR ‘treble’:ab,ti OR ‘treble’:ab,ti) AND (‘blind\*’:ab,ti OR ‘mask\*’:ab,ti)) OR ((‘control’:ab,ti OR ‘controlled’:ab,ti) AND (‘experimental’:ab,ti OR ‘intervention’:ab,ti)) OR ‘randomly assigned’:ab,ti OR ‘random assignment’:ab,ti OR ‘randomization’:ab,ti OR ‘randomisation’:ab,ti OR ‘randomized’:ab,ti OR ‘randomised’:ab,ti OR ‘blindly randomized’:ab,ti OR ‘blindly randomised’:ab,ti OR ‘randomly assigned’ OR ‘random assignment’ OR ‘randomization’ OR ‘randomisation’ OR ‘randomized’ OR ‘randomised’ OR ‘blindly randomized’ OR ‘blindly randomised’) |

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| **ProQuest** (drop down=anywhere) |
| (su(melanoma) OR su(sunburn & sun tanning) OR su(skin diseases) OR su(skin cancer) OR diskw(melanoma) OR diskw(malignant melanoma) OR diskw(melanomas) OR diskw(skin melanoma) OR diskw(skin cancer) OR diskw(non melanoma skin cancer) OR diskw(non-melanoma skin cancer) OR diskw(non-melanoma skin cancers) OR diskw(basal cell carcinoma) OR diskw(skin squamous cell carcinoma) OR diskw(squamous cell carcinoma) OR diskw(squamous cell carcinomas) OR diskw(skin neoplasms) OR diskw(actinic keratosis) OR diskw(skin pigmentation) OR diskw(skin carcinoma) OR diskw(sunburn) OR diskw(skin disease) OR diskw(indoor tanning) OR diskw(tanning) OR diskw(skin tumor) OR diskw(cutaneous malignant melanoma) OR diskw(cutaneous melanoma) OR diskw(ionizing radiation) OR ((ab,ti(skin) OR ab,ti(cutaneous)) AND (ab,ti(carcinoma) OR ab,ti(disease) OR ab,ti(melanoma) OR ab,ti(neoplasm) OR ab,ti(cancer) OR ab,ti(tumor) OR ab,ti(tumour) OR ab,ti(pigmentation))) OR ab,ti(skin neoplasm) OR ab,ti(skin neoplasms) OR ab,ti(melanoma) OR ab,ti(melanomas) OR ab,ti(non melanoma) OR ab,ti(non melanoma basal cell carcinoma) OR ab,ti(non melanoma squamous cell carcinoma) OR ab,ti(malignant melanoma) OR ab,ti(nevi and melanomas) OR ab,ti(actinic keratos\*) OR ab,ti(sunburn) OR ab,ti(sun damage) OR ab,ti(skin darkening) OR ab,ti(skin disease) OR ab,ti(skin diseases) OR ab,ti(skin cancer) OR ab,ti(skin cancers) OR ab,ti(skin tumor) OR ab,ti(skin tumour) OR ab,ti(skin tumors) OR ab,ti(skin tumours) OR ab,ti(tan) OR ab,ti(tanning) OR ab,ti(tanner) OR ab,ti(suntan))  |
| AND |
| (su(ultraviolet radiation) OR su(sunburn & sun tanning) OR su(sunscreen) OR diskw(ultraviolet) OR diskw(ultraviolet exposure) OR diskw(ultraviolet light) OR diskw(ultraviolet radiation) OR diskw(Ultraviolet rays) OR diskw(sunlight) OR diskw(sunlight exposure) OR diskw(sunbathing) OR diskw(suntanning) OR diskw(suntan) OR diskw(sun protection) OR diskw(sunburn) OR diskw(sunscreen) OR diskw(sunscreens) OR diskw(sunscreen agents) OR diskw(sunscreen use) OR diskw(sun exposure) OR diskw(UV exposure) OR diskw(indoor tanning) OR diskw(tanning) OR diskw(skin cancer prevention) OR diskw(indoor tanning) OR diskw(tanning bed) OR diskw(ultraviolet a) OR diskw(ultraviolet-a) OR diskw(ultraviolet b) OR diskw(ultraviolet-b) OR diskw(ultraviolet c) OR diskw(ultraviolet-c) OR diskw(Broad Spectrum) OR diskw(Zinc Oxide) OR diskw(Oxybenzone) OR diskw(Titanium Dioxide) OR diskw(PABA) OR diskw(Celecoxib) OR diskw(Acitretin) OR ab,ti(ultraviolet rays) OR ab,ti(sunbathing) OR ab,ti(suntan) OR ab,ti(UV exposure) OR ab,ti(UVR exposure) OR ab,ti(ultraviolet radiation exposure) OR ab,ti(UV radiation) OR ab,ti(UV rays) OR ab,ti(ultraviolet exposure) OR ab,ti(Sun exposure) OR ab,ti(solar exposure) OR ab,ti(solar rays) OR ab,ti(solar radiation) OR ab,ti(ultraviolet) OR ab,ti(UV) OR ab,ti(UVR) OR ab,ti(ultraviolet radiation) OR ab,ti(solar protective) OR ab,ti(solar protection) OR ab,ti(sun protective) OR ab,ti(sun protection) OR ab,ti(UV protective) OR ab,ti(UV protection) OR ab,ti(ultraviolet protection) OR ab,ti(ultraviolet protective) OR ab,ti(UVR protection) OR ab,ti(UVR protective) OR ab,ti(protective behaviors) OR ab,ti(sun protective behaviors) OR ab,ti(skin protective) OR ab,ti(skin cancer prevent) OR ab,ti(skin cancer prevention) OR ab,ti(skin cancer preventative) OR ab,ti(sunscreen) OR ab,ti(sunscreens) OR ab,ti(sunblock) OR ab,ti(sunblocks) OR ab,ti(tan) OR ab,ti(tanning) OR ab,ti(tanner) OR ab,ti(skin pigmentation) OR ab,ti(sunbather) OR ab,ti(sunburn) OR ab,ti(solarium) OR ab,ti(sunbed) OR ab,ti(sunlamp) OR ab,ti(Ionizing radiation) OR ab,ti(Ultraviolet A) OR ab,ti(Ultraviolet B) OR ab,ti(Ultraviolet C) OR ab,ti(Sun Avoidance) OR ab,ti(Broad Spectrum) OR ab,ti(Zinc Oxide) OR ab,ti(Avobenzone) OR ab,ti(Ecamsule) OR ab,ti(Oxybenzone) OR ab,ti(Titanium Dioxide) OR ab,ti(PABA) OR ab,ti(Celecoxib) OR ab,ti(Acitretin) OR ab,ti(sun safe) OR ab,ti(safe sun) OR (ab,ti(skin cancer) AND ab,ti(intervention)) OR (ab,ti(sun exposure) AND ab,ti(intervention)) OR (ab,ti(UV exposure) AND ab,ti(intervention)) OR (ab,ti(skin cancer) AND ab,ti(prevention)) OR (ab,ti(sun exposure) AND ab,ti(prevention)) OR (ab,ti(UV exposure) AND ab,ti(prevention)))  |
| AND |
| (diskw(randomized controlled trial) OR diskw(randomized controlled trials) OR diskw(randomised controlled trials) OR diskw(double-blind) OR diskw(random assignment) OR ((ab,ti(randomised) OR ab,ti(randomized)) AND (ab,ti(trial) OR ab,ti(trials))) OR ((ab,ti(single) OR ab,ti(double) OR ab,ti(doubled) OR ab,ti(triple) OR ab,ti(tripled) OR ab,ti(treble) OR ab,ti(trebled)) AND (ab,ti(blind\*) OR ab,ti(mask\*))) OR ((ab,ti(control) OR ab,ti(controlled)) AND (ab,ti(experimental) OR ab,ti(intervention))) OR ab,ti(randomly assigned) OR ab,ti(random assignment) OR ab,ti(randomization) OR ab,ti(randomisation) OR ab,ti(randomized) OR ab,ti(randomised) OR ab,ti(blindly randomized) OR ab,ti(blindly randomised) OR randomly assigned OR random assignment OR randomization OR randomisation OR randomized OR randomised OR blindly randomized OR blindly randomised) |

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| **PsycINFO** (drop down=all fields/select a field) |
| (((TI skin OR AB skin OR TI cutaneous OR AB cutaneous) AND (TI neoplasm OR AB neoplasm OR TI cancer OR AB cancer OR TI tumor OR AB tumor OR TI tumour OR AB tumour OR TI darkening OR AB darkening OR TI disease OR AB disease OR TI color OR AB color OR TI colour OR AB colour OR TI pigmentation OR AB pigmentation OR TI carcinoma OR AB carcinoma OR TI melanoma OR AB melanoma)) OR ((TI carcinoma OR AB carcinoma) AND (TI squamous OR AB squamous OR TI basal OR AB basal)) OR ((TI actinic OR AB actinic) AND (TI keratosis OR AB keratosis OR TI keratoses OR AB keratoses)) OR TI melanoma OR AB melanoma OR TI “non melanoma” OR AB “non melanoma” OR TI “malignant melanoma” OR AB “malignant melanoma” OR TI sunburn OR AB sunburn OR TI “sun damage” OR AB “sun damage” OR TI tan OR AB tan OR TI tanning OR AB tanning OR TI tanner OR AB tanner OR TI suntan OR AB suntan))  |
| AND |
| (((TI ultraviolet OR AB ultraviolet OR TI “ultraviolet radiation” OR AB “ultraviolet radiation” OR TI UV OR AB UV OR TI UVR OR AB UVR OR TI sun OR AB sun OR TI solar OR AB solar) AND (TI exposure OR AB exposure OR TI protection OR AB protection OR TI protective OR AB protective OR TI radiation OR AB radiation OR TI rays OR AB rays OR TI “protective behaviors” OR AB “protective behaviors”)) OR (((TI skin AND TI cancer) OR (AB skin AND AB cancer)) AND (TI prevention OR AB prevention OR TI preventative OR AB preventative OR TI intervention OR AB intervention)) OR (((TI sun OR AB sun OR TI UV OR AB UV) AND (TI exposure OR AB exposure)) AND TI intervention OR AB intervention) OR TI tan OR AB tan OR TI tanning OR AB tanning OR TI tanner OR AB tanner OR TI “skin pigmentation” OR AB “skin pigmentation” OR TI suntan OR AB suntan OR TI sunlight OR AB sunlight OR TI sunbathing OR AB sunbathing OR TI ultraviolet OR AB ultraviolet OR TI UV OR AB UV OR TI UVR OR AB UVR OR TI “skin protective” OR AB “skin protective” OR TI sunscreen OR AB sunscreen OR TI sunblock OR AB sunblock OR TI sunbather OR AB sunbather OR TI sunburn OR AB sunburn OR TI solarium OR AB solarium OR TI sunbed OR AB sunbed OR TI sunlamp OR AB sunlamp OR TI “Ionizing radiation” OR AB “Ionizing radiation” OR TI “Ultraviolet A” OR AB “Ultraviolet A” OR TI “Ultraviolet B” OR AB “Ultraviolet B” OR TI “Ultraviolet C” OR AB “Ultraviolet C” OR TI “Sun Avoidance” OR AB “Sun Avoidance” OR TI “Broad Spectrum” OR AB “Broad Spectrum” OR TI “Zinc Oxide” OR AB “Zinc Oxide” OR TI Avobenzone OR AB Avobenzone OR TI Ecamsule OR AB Ecamsule OR TI Oxybenzone OR AB Oxybenzone OR TI “Titanium Dioxide” OR AB “Titanium Dioxide” OR TI PABA OR AB PABA OR TI Celecoxib OR AB Celecoxib OR TI Acitretin OR AB Acitretin OR TI “sun safe” OR AB “sun safe” OR TI “safe sun” OR AB “safe sun”) |

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| --- |
| **PubMed** (drop down=all fields) |
| (Skin neoplasms[mh] OR melanoma[mh] OR carcinoma, basal cell[mh] OR carcinoma, squamous cell[mh] OR nevi and melanomas[mh] OR keratosis, actinic[mh] OR skin physiological processes[mh] OR sunburn[mh] OR skin neoplasm[tiab] OR skin neoplasms[tiab] OR melanoma[tiab] OR melanomas[tiab] OR non melanoma[tiab] OR non melanoma basal cell carcinoma[tiab] OR non melanoma squamous cell carcinoma[tiab] OR malignant melanoma[tiab] OR nevi and melanomas[tiab] OR actinic keratos\*[tiab] OR sunburn[tiab] OR sun damage[tiab] OR skin darkening[tiab] OR skin disease[tiab] OR skin diseases[tiab] OR skin cancer[tiab] OR skin cancers[tiab] OR skin tumor[tiab] OR skin tumour[tiab] OR skin tumors[tiab] OR skin tumours[tiab] OR tan[tiab] OR tanning[tiab] OR tanner[tiab] OR suntan[tiab] OR ((skin[tiab] OR cutaneous[tiab]) AND (tumor[tiab] OR tumour[tiab] OR tumors[tiab] OR tumours[tiab] OR cancer[tiab] OR cancers[tiab] OR neoplasm[tiab] OR neoplasms[tiab] OR carcinoma[tiab] OR carcinomas[tiab] OR disease[tiab] OR diseases[tiab] OR melanoma[tiab] OR melanomas[tiab] OR pigmentation[tiab] OR pigmentations[tiab]))) |
| AND |
| (Ultraviolet rays[mh] OR sunlight[mh] OR sunbathing[mh] OR suntan[mh] OR radiation, ionizing[mh] OR Sun Protection Factor[mh] OR sunscreening agents[mh] OR Zinc Oxide[mh] OR 4-aminobenzoic acid[mh] OR Celecoxib[mh] OR Acitretin[mh] OR ultraviolet rays[tiab] OR sunbathing[tiab] OR suntan[tiab] OR UV exposure[tiab] OR UVR exposure[tiab] OR ultraviolet radiation exposure[tiab] OR Sun exposure[tiab] OR solar rays[tiab] OR ultraviolet[tiab] OR UV[tiab] OR UVR[tiab] OR ultraviolet radiation[tiab] OR solar protective[tiab] OR solar protection[tiab] OR sun protective[tiab] OR sun protection[tiab] OR UV protective[tiab] OR UV protection[tiab] OR protective behaviors[tiab] OR sun protective behaviors[tiab] OR skin protective[tiab] OR skin cancer prevent[tiab] OR skin cancer prevention[tiab] OR preventative[tiab] OR sunscreen[tiab] OR sunscreens[tiab] OR sunblock[tiab] OR sunblocks[tiab] OR intervention[tiab] OR tan[tiab] OR tanning[tiab] OR tanner[tiab] OR skin pigmentation[tiab] OR sunbather[tiab] OR sunburn[tiab] OR solarium[tiab] OR sunbed[tiab] OR sunlamp[tiab] OR Ionizing radiation[tiab] OR Ultraviolet A[tiab] OR Ultraviolet B[tiab] OR Ultraviolet C[tiab] OR Sun Avoidance[tiab] OR Broad Spectrum[tiab] OR Zinc Oxide[tiab] OR Avobenzone[tiab] OR Ecamsule[tiab] OR Oxybenzone[tiab] OR Titanium Dioxide[tiab] OR PABA[tiab] OR Celecoxib[tiab] OR Acitretin[tiab] OR sun safe[tiab] OR safe sun[tiab] OR (skin cancer AND intervention) OR (sun exposure AND intervention) OR (UV exposure AND intervention) OR (skin cancer AND prevention) OR (sun exposure AND prevention) OR (UV exposure AND prevention) OR ((UV[tiab] OR UVR[tiab] OR ultraviolet[tiab] OR sun[tiab] OR solar[tiab]) AND (exposure[tiab] OR protection[tiab] OR protective[tiab] OR radiation[tiab] OR rays[tiab])) OR ((skin[tiab] AND cancer[tiab]) AND (prevention[tiab] OR preventative[tiab] OR prevention[tiab]))) |
| AND |
| ("randomized controlled trial"[pt] OR "randomized controlled trials as topic"[mh] OR “Double-Blind Method”[mh] OR ((randomised[tiab] OR randomized[tiab]) AND (trial[tiab] OR trials[tiab])) OR ((single[tiab] OR double[tiab] OR doubled[tiab] OR triple[tiab] OR tripled[tiab] OR treble[tiab] OR trebled[tiab]) AND (blind\*[tiab] OR mask\*[tiab])) OR ((control[tiab] OR controlled[tiab]) AND (experimental[tiab] OR intervention[tiab])) OR randomly assigned[tiab] OR random assignment[tiab] OR randomization[tiab] OR randomisation[tiab] OR randomized[tiab] OR randomised[tiab] OR blindly randomized[tiab] OR blindly randomised[tiab] OR randomly assigned OR random assignment OR randomization OR randomisation OR randomized OR randomised OR blindly randomized OR blindly randomised) |

Table S2

*Characteristics of Interventions Included in the Review*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NC | NE | AgeM (*SD*) [Range] | Sex- % female | Setting1 | Follow-up2 | Subj/Obj/ Both3 | Dependent Variables |
| Sun-related outcomes4 | Sunbed10 |
| Sun-screen5\* | Protective clothing6 | Sun exposure7 | Skin damage8 | Index9 |
| Aarestrup et al. (2014) – girls | 661 | 529 | -[14-18] | 100 | 5 | 26.07 | Subj |  |  |  |  |  | x |
| Aarestrup et al. (2014) – boys | 677 | 456 | -[14-18] | 0 | 5 | 26.07 | Subj |  |  |  |  |  | x |
| Abar et al. (2010) | 204 | 175 | 19.23 (3.46) | 100 | 1 | 21.73 | Subj |  |  |  |  |  | x |
| Adams et al. (2009) | 320 | 273 | 12.7 (1.3) | 53.5 | 1, 4 | 104.29 | Subj |  |  |  |  | x |  |
| Adams (1996) | 12 | 12 | - | 100 | 5 | 12 | Obj | x |  |  | x |  |  |
| Andersen et al. (2009) – guests  | 1763 | 1762 | - | 27.1 | 2 | - | Subj | x | x |  | x | x |  |
|  | Walkosz et al. (2007) – parent report of child behavior | 171 | 186 | 6.89[3-16] | 51 | 2 | - | Subj | x | x |  |  |  |  |
|  | Andersen et al. (2008) – employees | 863 | 600 | - | 37 | 2 | - | Subj | x | x | x | x |  |  |
| Aneja et al. (2012) | 66 | 66 | - | - | 4 | 12 | Subj | x | x |  |  |  |  |
| Armstrong et al. (2011) | 40 | 43 | 37.06 (13.0) | 50 | 1 | 12 | Subj | x |  |  |  |  |  |
| Armstrong et al. (2009) | 35 | 35 | 33.6 [18-72] | 70 | 1 | 0 | Obj | x |  |  |  |  |  |
| Baghianimoghadam et al. (2011) | 180 | 180 | 16.04 (0.98) | 100 | 5 | 8.69 | Subj | x | x |  |  |  |  |
| Baker (2014 ) – mothers | 25 | 17 | 45.07 (5.33) | 100 | 1 | 17.38 | Subj |  |  |  |  |  | x |
| Baker (2014) – teen daughters | 25 | 17 | 15.74 (1.56) | 100 | 1 | 17.38 | Subj |  |  |  |  |  | x |
| Bauer et al. (2005) – control v. education only | 199 | 369 | 4.3(1.1) | - | 1, 4 | 156.4 | Subj | x | x | x | x |  |  |
| Bauer et al. (2005) – control v. education & sunscreen | 199 | 465 | 4.3(1.1) | - | 1, 4 | 156.4 | Subj | x | x | x | x |  |  |
| Benjes et al. (2004) | 47 | 45 | - | 100 | 1, 4 | 52.1 | Subj | x | x | x | x |  |  |
| Blashill et al. (2018) - facial morphing | 36.5 | 73 | 19.72 (2.5) | 81.3 | 5 | 4.35 | Subj |  |  | x |  |  | x |
| Blashill et al. (2018) - mindfulness | 36.5 | 73 | 19.72 (2.5) | 81.3 | 5 | 4.35 | Subj |  |  | x |  |  | x |
| Borland et al. (1991) | 493 | 492 | - | - | 7 | 13 | Obj |  | x |  |  | x |  |
| Bowen et al. (2018) | 137 | 141 | 51.32 (19-91) | 63.6 | 1 | 52.1 | Subj | x | x | x |  |  |  |
| Bowen et al. (2015) | 145 | 143 | 56.11 (12.33) | 56 | 1 | 52.1 | Subj | x | x | x |  |  |  |
| Bränstrom et al. (2003) | 313 | 952 | -[18-37] | - | 1 | 65.2 | Subj |  |  | x | x | x |  |
| Buller et al. (2015) | 102 | 89 | 33.3 [19-72] | 73.5 | 1 | 0 | Subj | x | x | x | x | x |  |
| Buller et al. (2000) | 281 | 280 | -[5-11] | - | 1 | 26.1 | Subj |  |  |  |  | x |  |
| Buller et al. (2006) | 683 | 779 | 12.91[11-15] | 57.2 | 5 | 4.3 | Subj | x | x | x | x | x |  |
| Buller et al. (1997) | 80 | 79 | - | 56 | 5 | 13.03 | Subj | x | x |  |  | x |  |
| Buller et al. (1994) | 59 | 59 | - | - | 5 | 8 | Subj | x | x | x |  |  |  |
| Carli et al. (2008) | 40 | 46 | 23.86[21-23] | 69.8 | 1 | 8.69 | Subj | x | x |  | x |  |  |
| Carlson (1985) | 15 | 13 | 36.0 (10.15) | 100 | 3 | 2 | Subj |  |  | x |  | x |  |
| Chait et al. (2015) – dissonance/tanning condition | 38 | 79 | 19.82 (1.5) | 100 | 5 | 4.35 | Subj | x |  | x |  |  | x |
| Chait et al. (2015) – psychoeducation condition | 38 | 70 | 19.82 (1.5) | 100 | 5 | 4.35 | Subj | x |  | x |  |  | x |
| Cheng et al. (2011) – intervention a v. control | 56 | 91 | 26.5 (7.7) | 62.5 | 2 | 4.35 | Subj | x | x | x |  | x |  |
| Cheng et al. (2011) – intervention b v. control | 57 | 81 | 26.5 (7.7) | 62.5 | 2 | 4.35 | Subj | x | x | x |  | x |  |
| Cho et al. (2018) - argument | 38 | 95 | 20.23 (1.16) | 100 | 1 | 26.1 | Subj |  |  |  |  |  | x |
| Cho et al. (2018) - story | 38 | 76 | 20.23 (1.16) | 100 | 1 | 26.1 | Subj |  |  |  |  |  | x |
| Cho (2000) | 115 | 114 | 20.0(2.1) | 60.6 | 5 | 4 | Subj |  |  |  |  | x |  |
| Chou (1994) – males | 93 | 292 | 37.0[21-63] | 0 | 1 | 52.1 | Subj | x | x | x |  |  |  |
| Chou (1994) – females | 126 | 222 | 37.0 [21-63] | 100 | 1 | 52.1 | Subj | x | x | x |  |  |  |
| Clowers-Webb et al. (2006) | 72 | 65 | 54.3 (13.06) | 41.1 | 1, 4 | 43.5 | Subj |  |  |  |  | x |  |
| Craciun et al. (2012) – volitional intervention v. control | 30 | 70 | 25.04 (8.66) | 100 | 1 | 4.35 | Subj | x |  |  |  |  |  |
| Craciun et al. (2012) – motivational intervention v. control | 31 | 74 | 25.04 (8.66) | 100 | 1 | 4.35 | Subj | x |  |  |  |  |  |
| Crane et al. (2012) | 310 | 324 | -[6-9] | 95 | 1 | 156.4 | Subj | x | x | x | x | x |  |
| Crane et al. (2006) | 269 | 276 | -[0-3] | 98 | 4 | 0 | Subj | x | x | x |  |  |  |
| Crane et al. (1999) | 14 | 13 | - | - | 1 | 52.1 | Subj | x | x |  |  |  |  |
| Cust et al. (2016) | 55 | 53 | - | 50 | 1 | 13.03 | Obj |  |  | x |  | x |  |
| Darlow & Heckman (2017) - tailored text messaging | 8 | 24 | 24.4 (18-29) | 100 | 1 | 4.35 | Subj | x | x | x |  |  |  |
| Darlow & Heckman (2017) - behavior tracking | 8 | 28 | 24.4 (18-29) | 100 | 1 | 4.35 | Subj | x | x | x |  |  |  |
| Darlow & Heckman (2017) – tailored text messaging & behavior tracking | 8 | 28 | 24.4 (18-29) | 100 | 1 | 4.35 | Subj | x | x | x |  |  |  |
| Detweiler et al. (1999) | 108 | 109 | 38.7 [18-79] | 76 | 2 | 0 | Both | x\* |  |  |  |  |  |
| Dey et al. (1995) | 6109 | 6276 | -[0-97] | 52.5 | 2 | - | Subj |  |  |  | x |  |  |
| Dieng et al. (2016) | 81 | 70 | 58.5 (11.9) | 45 | 1, 4 | 26.1 | Subj |  |  | x |  |  | x |
| Dietrich et al. (2000) | 744 | 746 | -[2-11] | - | 2, 4, 5 | 52.1 | Obj | x | x | x |  | x |  |
| Dixon et al. (2007) – standard forecast & UV vs. standard forecast control | 92 | 183 | - | 66 | 1 | - | Subj | x | x | x | x |  |  |
| Dixon et al. (2007) – standard forecast & UV & protection messages vs. standard forecast control | 92 | 190 | - | 66 | 1 | - | Subj | x | x | x | x |  |  |
| Dobbinson et al. (2009) | 26 | 25 | - | - | 5 | - | Obj |  |  | x |  |  |  |
| Duffy et al. (2017) – education & texts | 26 | 69 | 44.2 (10.5) | 8.5 | 1, 7 | - | Subj | x |  |  | x |  |  |
| Duffy et al. (2017) – education & mailed sunscreen | 27 | 67 | 44.2 (10.5) | 8.5 | 1, 7 | - | Subj | x |  |  | x |  |  |
| Duffy et al. (2017) – education & texts & mailed sunscreen | 27 | 76 | 44.2 (10.5) | 8.5 | 1, 7 | - | Subj | x |  |  | x |  |  |
| Dukeshire (1996) (Study 2) – high fear/self focus | 4 | 22 | - | 82.4 | 5 | - | Obj | x\* |  |  |  |  |  |
| Dukeshire (1996) (Study 2) – high fear/other focus | 4 | 23 | - | 82.4 | 5 | - | Obj | x\* |  |  |  |  |  |
| Dukeshire (1996) (Study 2) – low fear/self focus | 5 | 16 | - | 82.4 | 5 | - | Obj | x\* |  |  |  |  |  |
| Emmons et al. (2011) – education plus biometric feedback | 42 | 124 | - | 50 | 2 | 12.1 | Subj | x | x | x | x |  |  |
| Emmons et al. (2011) – education plus dermatologist skin examination | 43 | 142 | - | 45 | 2 | 12.1 | Subj | x | x | x | x |  |  |
| Emmons et al. (2011) – education plus biometric feedback and dermatologist skin examination | 43 | 138 | - | 67 | 2 | 12.1 | Subj | x | x | x | x |  |  |
| Erkin & Temel (2017) | 40 | 40 | - | 50 | 5 | 26.1 | Subj | x | x | x |  |  |  |
| Falk & Magnusson (2011) – Group 1 v. Group 2 | 40 | 78 | - | 61 | 4 | 156.4 | Subj | x |  | x | x |  | x |
| Falk & Magnusson (2011) – Group 1 v. Group 3 | 41 | 75 | - | 61 | 4 | 156.4 | Subj | x |  | x | x |  | x |
| Geller et al. (2006)  | 165 | 149 | - | 53.4 | 1 | 30.4 | Subj | x |  |  | x |  |  |
| Geller et al. (2001) | 61 | 80 | 20.9 (8.9) | 68.7 | 2 | 6 | Subj | x | x | x | x | x |  |
| Gibbons et al. (2005): study 1 | 26 | 32 | - | 53.4 | 5 | 4 | Subj |  |  |  |  |  | x |
| Gibbons et al. (2005): study 2 | 57 | 52 | - | 60 | 5 | 4 | Subj |  |  |  |  |  | x |
| Girgis et al. (1993) – intensive (i.e. Skinsafe) | 92 | 247 | 9.97[9-11] | 53 | 5 | 30.8 | Subj |  |  |  |  | x |  |
| Girgis et al. (1993) – standard lecture | 93 | 180 | 9.97[9-11] | 56 | 5 | 30.8 | Subj |  |  |  |  | x |  |
| Girgis et al. (1994) | 77 | 65 | 40.5 [22-63] | 0.7 | 3 | 2 | Subj |  |  |  |  | x |  |
| Glanz et al. (2002) – parent | 396 | 452 | 39.2 (7.74) | 83 | 2 | 8 | Subj | x | x | x |  | x |  |
| Glanz et al. (2002) – parent on behalf of child | 301 | 301 | 6.6 (1.51) | 47.1 | 2 | 8 | Subj | x | x | x | x | x |  |
| Glanz et al. (2001) – education only: child | 69 | 143 | 7.0[6-8] | 49 | 1, 2 | 1 | Subj | x |  |  |  | x |  |
| Glanz et al. (2001) – education/environment: child | 69 | 102 | 7.0[6-8] | 49 | 1, 2 | 1 | Subj | x |  |  |  | x |  |
| Glanz et al. (2001) – education only: staff | 12 | 52 | 20.9 (7.7) | 60.9 | 2 | 2 | Subj | x |  |  |  | x |  |
| Glanz et al. (2001) – education/environment: staff | 12 | 68 | 20.9 (7.7) | 60.9 | 2 | 2 | Subj | x |  |  |  | x |  |
| Glanz et al. (2010) | 289 | 307 | 41.7 (11.0) | 79.9 | 1 | 23.9 | Subj | x | x | x | x | x |  |
| Glanz et al. (2013) – parent | 530 | 517 | - | 90 | 1 | 16 | Subj | x | x | x | x | x |  |
| Glanz et al. (2013) – parent report of child behavior | 530 | 517 | 7.1(1.1) | 49 | 1 | 16 | Subj | x | x | x | x | x |  |
| Glanz et al. (2014) | 109 | 83 | 55.2 (15.2) | 73.4 | 1 | 13.04 | Subj | x | x | x | x | x |  |
| Glanz et al. (2013) | 38 | 35 | 59.5 (15.5) | 68.5 | 4, 5 | 17.38 | Subj | x | x | x | x | x |  |
| Glasser et al. (2010) | 70 | 71 | - | 82.2 | 4 | 13.04 | Subj | x | x | x |  | x |  |
| Glazebrook et al. (2006) | 245 | 214 | 38.3 (14.81) | 80.3 | 4 | 26.07 | Subj |  |  |  |  | x |  |
| Gold et al. (2011) | 158 | 200 | -[17-30] | 40.5 | 1 | 21.73 | Subj | x | x | x |  |  |  |
| Greene & Brinn (2003) – statistical message vs. control | 22 | 50 | 21.4 (1.41) | 100 | 5 | 3 | Subj |  |  |  |  |  | x |
| Greene & Brinn (2003) – narrative message vs. control | 23 | 50 | 21.4 (1.41) | 100 | 5 | 3 | Subj |  |  |  |  |  | x |
| Gritz et al. (2007) – parent report of child | 347 | 347 | 32.6 (6.3) | 91.2 | 1 | 0 | Subj | x |  |  |  | x |  |
| Gritz et al. (2007) – staff use on students | 113 | 112 | 33.4 (11.5) | 97 | 5 | 0 | Subj | x |  |  |  | x |  |
| Gritz et al. (2013) | 143 | 138 | 7.3 (3.85) | 49.1 | 1 | 17.38 | Subj | x | x | x |  | x |  |
| Hacker et al. (2018) - SunSmart app | 20.5 | 42 | 25.8 (18-35) | 68.5 | 1 | 13 | Obj |  |  | x |  |  | x |
| Hacker et al. (2018) - UV radiation monitor | 20.5 | 41 | 25.8 (18-35) | 68.5 | 1 | 13 | Obj |  |  | x |  |  | x |
| Heckman et al. (2016) – UV4.me intervention compared to control | 102 | 195 | 21.8 (2.2) | 68.6 | 1 | 52.14 | Subj |  |  | x | x | x | x |
| Heckman et al. (2016) – assessment onlycompared to control | 103 | 229 | 21.8 (2.2) | 65.9 | 1 | 52.14 | Subj |  |  | x | x | x | x |
| Hevey & Dolan (2014) | 284 | 249 | 20.4 (3.1) | 58.5 | 6 | 0 | Subj | x\* |  |  |  |  |  |
| Hillhouse et al. (2008) | 217 | 195 | 18.63 (0.78) | 100 | - | 26.07 | Subj |  |  |  |  |  | x |
| Hillhouse & Turrisi (2002) | 73 | 74 | 20.8 (3.1) | 100 | 1 | 8.69 | Subj |  |  |  |  |  | x |
| Ho et al. (2016) | 143 | 147 | -[2-6] | 51.95 | 1 | 4 | Subj | x | x | x | x | x |  |
| Hoffmann (1995) | 82 | 99 | - | 51 | 5 | 0 | Subj | x |  |  |  |  |  |
| Holzhauser (2011) – collective efficacy intervention compared to delayed control | 24 | 65 | 45.18 (10.38) | 94.9 | 5 | 0 | Subj |  |  |  |  | x |  |
| Holzhauser (2011) – self efficacy intervention compared to delayed control | 25 | 61 | 45.18 (10.38) | 94.9 | 5 | 0 | Subj |  |  |  |  | x |  |
| Huang et al. (2013) | 64 | 64 | - | - | - | 52.14 | Subj | x | x | x |  |  |  |
| Jackson & Aiken (2006) | 65 | 74 | 19.46 (1.3) | 100 | 5 | 2 | Subj |  |  | x |  | x |  |
| Karnatz (1993) – measurement & information | 17 | 32 | 15.51 (1.32) | 66 | 1 | 3 | Subj | x | x | x |  |  |  |
| Karnatz (1993) – measurement & ersonalized feedback | 17 | 32 | 15.51 (1.32) | 66 | 1 | 3 | Subj | x | x | x |  |  |  |
| Kiekbusch et al. (2000) – women | 173 | 150 | -[20-59] | 100 | 3 | 104.29 | Subj |  |  |  |  | x |  |
| Kiekbusch et al. (2000) – men | 152 | 129 | -[20-59] | 0 | 3 | 104.29 | Subj |  |  |  |  | x |  |
| Koster et al. (2016) - diary | 166 | 74 | - | 80 | 1 | 4.3 | Subj | x |  | x |  |  |  |
| Koster et al. (2016) - dosimeter | 74 | 166 | - | 80 | 1 | 4.3 | Subj | x |  | x |  |  |  |
| Lescano (1999) – school intervention | 27 | 78 | 10.77 (0.57) | 51 | 5 | 5 | Subj | x | x | x |  | x |  |
| Lescano (1999) – school & home intervention | 27 | 71 | 10.77 (0.57) | 60 | 5 | 5 | Subj | x | x | x |  | x |  |
| Lowe et al. (1999) | 1589 | 1366 | - | - | 5 | 165.12 | Subj |  |  |  |  | x |  |
| Mahler (2018) | 46 | 48 | 20.81 (3.38) | 83 | 1, 5 | 4.3 | Subj |  |  | x |  |  | x |
| Mahler (2017) | 29 | 94 | 20.97 (2.75) | 88 | 5 | 5 | Subj |  |  |  |  |  | x |
| Mahler et al. (2013) – no UV photo/yes video | 36 | 108 | 19.57 (1.80) | 62.7 | 5 | 54.48 | Subj | x |  | x |  |  | x |
| Mahler et al. (2013) – yes photo/no video | 36 | 112 | 19.57 (1.80) | 62.7 | 5 | 54.48 | Subj | x |  | x |  |  | x |
| Mahler et al. (2013) – yes photo/yes video | 36 | 108 | 19.57 (1.80) | 62.7 | 5 | 54.48 | Subj | x |  | x |  |  | x |
| Mahler et al. (2003): experiment 2 -UV photo/photoaging info | 5 | 11 | 35.28 (9.89) | 65.8 | 2 | 4.71 | Subj | x |  | x |  |  |  |
| Mahler et al. (2003): experiment 2 – UV photo/no info | 5 | 17 | 35.28 (9.89) | 65.8 | 2 | 4.71 | Subj | x |  | x |  |  |  |
| Mahler et al. (2003): experiment 2 – no UV photo/photoaging info | 6 | 19 | 35.28 (9.89) | 65.8 | 2 | 4.71 | Subj | x |  | x |  |  |  |
| Mahler et al. (2005) – intervention only | 24 | 49 | 22.21 (4.66) | 78.1 | 5 | 3.91 | Subj | x |  | x |  |  |  |
| Mahler et al. (2005) – intervention & sunless tanning lotion | 25 | 45 | 22.21 (4.66) | 78.1 | 5 | 3.91 | Subj | x |  | x |  |  |  |
| Mahler et al. (1997) – photoaging condition | 18 | 37 | 25.56 (3.40) | 70.9 | 5 | 3 | Subj |  |  | x |  |  |  |
| Mahler et al. (1997) – skin cancer condition | 18 | 37 | 25.56 (3.40) | 70.9 | 5 | 3 | Subj |  |  | x |  |  |  |
| Mahler et al. (2008) – basic intervention (photoaging video/UV photo) | 5 | 23 | 21.3 (2.73) | 83.2 | - | 4.64 | Subj |  |  |  |  | x |  |
| Mahler et al. (2008) – basic intervention & injunctive norms | 5 | 24 | 21.3 (2.73) | 83.2 | - | 4.64 | Subj |  |  |  |  | x |  |
| Mahler et al. (2008) – basic intervention & descriptive norm | 5 | 22 | 21.3 (2.73) | 83.2 | - | 4.64 | Subj |  |  |  |  | x |  |
| Mahler et al. (2008) – basic intervention & injunctive & descriptive | 6 | 21 | 21.3 (2.73) | 83.2 | - | 4.64 | Subj |  |  |  |  | x |  |
| Mahler et al. (2006) – UV photo/photoaging info | 18 | 55 | 35.76 (11.13) | 59.4 | 2 | 8.88 | Subj |  |  |  |  | x |  |
| Mahler et al. (2006) – UV photo/no info | 18 | 52 | 35.76 (11.13) | 59.4 | 2 | 8.88 | Subj |  |  |  |  | x |  |
| Mahler et al. (2006) – no UV photo/photoaging info | 19 | 58 | 35.76 (11.13) | 59.4 | 2 | 8.88 | Subj |  |  |  |  | x |  |
| Mahler et al. (2007) – no photo/video | 7 | 18 | 20.13 (3.38) | 80.5 | 5 | 54.12 | Subj |  |  | x |  | x |  |
| Mahler et al. (2007) – photo/no video | 7 | 23 | 20.13 (3.38) | 80.5 | 5 | 54.12 | Subj |  |  | x |  | x |  |
| Mahler et al. (2007) – photo/video | 8 | 19 | 20.13 (3.38) | 80.5 | 5 | 54.12 | Subj |  |  | x |  | x |  |
| Mahler et al. (2010) – intervention only | 10 | 30 | 19.94 (2.36) | 77 | 5 | 5 | Subj |  |  | x |  | x |  |
| Mahler et al. (2010) – intervention & downward comparison photos | 11 | 30 | 19.94 (2.36) | 77 | 5 | 5 | Subj |  |  | x |  | x |  |
| Mahler et al. (2010) – intervention & upward comparison photos | 11 | 32 | 19.94 (2.36) | 77 | 5 | 5 | Subj |  |  | x |  | x |  |
| Manne et al. (2010) | 191 | 193 | 47.6 (13.2) | 63 | 1 | 39.11 | Subj |  |  |  |  | x |  |
| Mayer et al. (2009) | 1170 | 968 | 43.0 (8.6) | 30.1 | 7 | - | Both | x | x |  | x |  |  |
| Mayer et al. (1997) | 68 | 64 | 7.07 (1.33) | 49.7 | 2 | - | Both | x | x |  | x | x |  |
| Mays et al. (2011) | 37 | 38 | 14.2 (2.4) | 52 | - | 4.35 | Subj | x | x | x |  | x |  |
| Mermelstein et al. (1999) | 1668 | 1267 | - | 50.3 | 5 | - | Obj | x\* |  |  |  |  |  |
| Morris et al. (2014): study 1 | 28 | 31 | 19.36 (1.2) | 100 | 6 | 0 | Obj | x\* |  |  |  |  |  |
| Moser (2012) – emotional arousal & self efficacy | 50 | 107 | 19.43 (2.5) | 100 | 5 | 2 | Subj | x | x | x |  | x |  |
| Moser (2012) – self efficacy only | 51 | 45 | 19.43 (2.5) | 100 | 5 | 2 | Subj | x | x | x |  | x |  |
| Naldi et al. (2007) | 3958 | 4179 | 8.0(0.7) | 49.3 | 5 | 52.14 | Subj | x | x | x | x |  |  |
| Novick (1997) | 14 | 16 | -[13-18] | 100 | 2 | 5 | Subj | x |  |  |  |  |  |
| Olson et al. (2007) | 138 | 349 | - | 54.7 | 2, 5 | 104.3 | Both | x | x |  |  |  |  |
| Pagoto et al. (2010) | 125 | 125 | 31.21 (12.36) | 100 | 2 | 52.14 | Subj | x | x | x | x |  |  |
| Prochaska et al. (2005) | 2012 | 1822 | 44.7 (12.7) | 69.9 | 1 | 52.14 | Subj | x |  | x |  |  |  |
| Rat et al. (2014) | 76 | 97 | 43.25 (16.05) | 76 | 4 | 21.73 | Subj |  |  | x | x | x | x |
| Recklitis et al. (2017) | 11 | 12 | 25 (18-44) | 50 | 4 | - | Subj | x | x | x |  |  |  |
| Reid & Aiken (2013) | 81 | 76 | 64.0 (9.0) | 100 | 1 | 4 | Subj | x | x |  |  | x |  |
| Roberts & Black (2009) – community campaign condition | 12 | 30 | 20.68 (3.87) | 73 | 5 | 1 | Both | x | x | x | x | x |  |
| Roberts & Black (2009) – combination intervention | 12 | 28 | 20.68 (3.87) | 73 | 5 | 1 | Both | x | x | x | x | x |  |
| Robinson et al. (2014) | 51 | 50 | 54.0 [44-62] | 33.98 | 1, 4 | 6 | Subj |  |  | x | x | x |  |
| Rodrigue (1996) – CPP (comprehensive prevention program) | 8 | 21 | 33.6 (5.7) | 100 | 5 | 12 | Subj |  |  |  |  | x |  |
| Rodrigue (1996) – IOC (information only condition) | 8 | 18 | 33.6 (5.7) | 100 | 5 | 12 | Subj |  |  |  |  | x |  |
| Roetzheim et al. (2011) | 1244 | 824 | - | - | 5 | - | Both |  | x |  |  |  |  |
| Sancho-Garnier et al. (2012) | 208 | 266 | 9.9 (0.69) | 46 | 5 | 52.14 | Subj | x | x | x | x |  |  |
| Schüz et al. (2013) – UV | 14 | 36 | 33.78 [11-71] | 69.4 | 6 | 2 | Subj |  |  | x |  |  |  |
| Schüz et al. (2013) – SA | 14 | 42 | 33.78 [11-71] | 69.4 | 6 | 2 | Subj |  |  | x |  |  |  |
| Schüz et al. (2013) – UVSA | 15 | 41 | 33.78 [11-71] | 69.4 | 6 | 2 | Subj |  |  | x |  |  |  |
| Small-Johnson (1998) – child | 563 | 318 | - | 53.8 | 1, 5 | 17.73 | Subj |  |  |  |  | x |  |
| Small-Johnson (1998) – parent | 613 | 351 | - | 87.8 | 1, 5 | 17.73 | Subj |  |  |  |  | x |  |
| Small-Johnson (1998) – parent report of child behavior | 608 | 349 | - | 53.8 | 1, 5 | 17.73 | Subj |  |  |  | x | x |  |
| Stankevičiūtė et al. (2004) | 106 | 105 | - | 47 | 1, 5 | 13.04 | Subj | x | x | x |  |  |  |
| Stapleton et al. (2010) | 191 | 159 | 18.69 (0.98) | 100 | 1 | 26.07 | Subj |  |  |  |  |  | x |
| Stapleton et al. (2015) | 85 | 74 | 19.78 (1.35) | 100 | - | 6 | Subj |  |  |  |  |  | x |
| Stock et al. (2009) – no uv/aging | 6 | 30 | 46.5 [24-64] | 0 | 7 | 52.14 | Subj |  |  |  |  | x |  |
| Stock et al. (2009) – no uv/cancer | 6 | 31 | 46.5 [24-64] | 0 | 7 | 52.14 | Subj |  |  |  |  | x |  |
| Stock et al. (2009) – uv/aging | 6 | 31 | 46.5 [24-64] | 0 | 7 | 52.14 | Subj |  |  |  |  | x |  |
| Stock et al. (2009) – uv/cancer | 6 | 32 | 46.5 [24-64] | 0 | 7 | 52.14 | Subj |  |  |  |  | x |  |
| Stump (2017) - feedback | 7.5 | 15 | 49.87 (15.86) | 53.3 | 1 | 8.7 | Both |  |  | x |  |  |  |
| Stump (2017) - self-monitoring | 7.5 | 15 | 49.87 (15.86) | 53.3 | 1 | 8.7 | Both |  |  | x |  |  |  |
| Tuong & Armstrong (2014) | 25 | 25 | 17.15 (0.7) | 80 | 5 | 6 | Subj | x | x | x |  |  |  |
| Turrisi et al. (2004) | 129 | 340 | -[9-12] | 51 | 1 | 0.1429 | Subj |  |  | x | x |  |  |
| vanderPols et al. (2006) | 516 | 502 | 47.0 [25-75] | 57 | 4 | - | Both | x |  |  |  |  |  |
| vanOsch et al. (2008) | 251 | 185 | 36.4 (5.17) | 77 | 1 | 21.73 | Subj | x |  |  |  |  |  |
| Walkosz et al. (2015) – employees | 1470 | 1470 | 36.0[-] | 38 | 2 | - | Subj |  |  |  | x | x |  |
|  | Walkosz et al. (2014) – guests | 1737 | 1643 | 41.3 (13.2) | 29.9 | 2 | - | Subj | x | x |  | x | x |  |
| Walsh et al. (2014) | 57 | 57 | 46.2 [27-67] | 100 | 6 | 0.1429 | Obj | x\* |  |  |  |  |  |
| Weinstock et al. (2002) | 635 | 659 | 33.0 (12.0) | 60 | 2 | 52.14 | Subj | x | x | x |  | x |  |
| White et al. (2018) | 158 | 150 | 13.73 (12-17) | 61.1 | 5 | 4 | Subj |  |  |  |  |  | x |
| White et al. (2015) | 149 | 126 | 39.3 (14.41) | 61.3 | 1 | 4.35 | Subj |  |  |  |  | x |  |
| Youl et al. (2015) | 165 | 173 | 31.69 (6.18) | 67 | - | 52.14 | Subj |  |  | x | x | x |  |

1Intervention setting: 1=home, 2=tourist/recreation site, 3=community-based, 4=hospital/clinic, 5=school or university, 6=general lab setting,

7=outdoor worker’s field office/training center.

2Follow-up: timing of the follow-up in weeks, from the end of the main intervention.

3Subj/Obj/both: outcome measures were Subjective, Objective, or both.

4All sun related outcomes - average of: sunscreen use, sunscreen coupon, protective clothing, sun exposure, skin damage, & sun protection index.

5Sunscreen - average of: frequency of sunscreen use, measurement of sunscreen use & sunscreen coupon.

\*Sunscreen coupon redeem or sunscreen sample only: coded ‘x’ if the only outcome measured was redeeming a sunscreen coupon or taking a sunscreen sample.

6Protective clothing - average of: all protective clothing use, protective clothing use (not including hat), & hat use.

7Sun exposure - average of: shade seeking, avoiding sun at peak hours, outdoor tanning/sunbathing, general sun exposure, & sun exposure due to

outdoor activities.

8Skin damage - average of: sunburn, skin damage (sunburn or tan/skin darkening), & change in skin color measured by spectrophotometer or

colorimeter.

9Sun protection index: a combined measure within each paper that can include any combination of the following: sunscreen use, protective clothing use,

hat use, shade seeking, limiting exposure at peak hours, sunscreen lip balm, sunscreen reapplication, wearing sunglasses/goggles, having sun protective supplies, not sunbathing/outdoor tanning, not getting sunburnt, performing skin self examinations, seeking clinician skin examinations.

10Sunbed use/indoor tanning.

Table S3 *Coding Categories for Psychological Change Techniques and Delivery Modes*

|  |  |  |
| --- | --- | --- |
| **Behavior Change Techniques** |  |  |
| VarName | BCT | Description | Data Input |
| BCT1(Abraham & Michie 2008) | Provide information on consequences | Information about the benefits or costs of action or inaction, focusing on what will happen if the person does or does not perform the behavior | 0-NO |
| 1-YES |
| BCT1a | Appearance consequences | Information provided specifically about appearance consequences where it was central to the study rationale to target appearance (only considered if BCT1 is given a “1”) | 0-NO |
| 1-YES |
| BCT1b | Health consequences | Information provided specifically about health consequences where it was central to the study rationale to target health (only considered if BCT1 is given a “1”) | 0-NO |
| 1-YES |
| BCT2 (Abraham & Michie 2008) | Provide information about others’ approval | Information about what others think about the person’s behavior and whether others will approve ordisapprove of any proposed behavior change | 0-NO |
| 1-YES |
| BCT3 | Expert recommendations | Information from specific recognized expert (a doctor) or organization (e.g. American Cancer Society) | 0-NO |
| 1-YES |
| BCT4 (Abraham & Michie 2008) | Prompt intention formation | Encouraging the person to decide to act or set a general goal, for example, to make a behavioral resolutionsuch as, “I will take more exercise next week‘ | 0-NO |
| 1-YES |
| BCT5 (Abraham & Michie 2008) | Prompt barrier identification | Identify barriers to performing the behavior and plan ways of overcoming them | 0-NO |
| 1-YES |
| BCT6 (Abraham & Michie 2008) | Provide general encouragement | Praising or rewarding the person for effort or performance without this being contingent on specified behaviors or standards of performance | 0-NO |
| 1-YES |
| BCT7 | Prescribe performance of behavior | Telling the person they should, must, or ought to protect themselves by engaging in sun protection behaviors | 0-NO |
| 1-YES |
| BCT8 (Abraham & Michie 2008) | Provide instruction | Telling the person how to perform a behavior and/or preparatory behaviors | 0-NO |
| 1-YES |
| BCT9 (Abraham & Michie 2008) | Model or demonstrate the behavior | An expert shows the person how to correctly perform a behavior, for example, in class or on video | 0-NO |
| 1-YES |
| BCT10 (Abraham & Michie 2008) | Prompt specific goal setting | Involves detailed planning of what the person will do, including a definition of the behavior specifying frequency, intensity, or duration and specification of at least one context, that is, where, when, how, or with whom | 0-NO |
| 1-YES |
| BCT11 (Abraham & Michie 2008) | Prompt review of behavioral goals | Review and/or reconsideration of previously set goals or intentions | 0-NO |
| 1-YES |
| BCT12 (Abraham & Michie 2008) | Prompt self-monitoring of behavior | The person is asked to keep a record of specified behavior(s) (e.g., in a diary) | 0-NO |
| 1-YES |
| BCT13 (Abraham & Michie 2008) | Provide feedback on performance | Providing data about recorded behavior or evaluating performance in relation to a set standard or others’ performance, i.e., the person received feedback on their behavior. | 0-NO |
| 1-YES |
| BCT14 (Abraham & Michie 2008) | Provide contingent rewards | Praise, encouragement, or material rewards that are explicitly linked to the achievement of specified behaviors | 0-NO |
| 1-YES |
| BCT15 (Abraham & Michie 2008) | Teach to use prompts or cues | Teach the person to identify environmental cues that can be used to remind them to perform a behavior, including times of day or elements of contexts. | 0-NO |
| 1-YES |
| BCT16 (Abraham & Michie 2008) | Prompt practice | Prompt the person to rehearse and repeat the behavior or preparatory behaviors | 0-NO |
| 1-YES |
| BCT17 (Abraham & Michie 2008) | Use follow-up prompts | Contacting the person again after the main part of the intervention is complete | 0-NO |
| 1-YES |
| BCT18 (Abraham & Michie 2008) | Provide opportunities for socialcomparison | Facilitate observation of nonexpert others’ performance for example, in a group class or using video or case study | 0-NO |
| 1-YES |
| BCT19 (Abraham & Michie 2008) | Plan social support or social change | Prompting consideration of how others could change their behavior to offer the person help or(instrumental) social support, including “buddy” systems and/or providing social support | 0-NO |
| 1-YES |
| BCT20 (Abraham & Michie 2008) | Prompt identification as a role model | Indicating how the person may be an example to others and influence their behavior or provide anopportunity for the person to set a good example | 0-NO |
| 1-YES |
| BCT21 (Abraham & Michie 2008) | Prompt self-talk | Encourage use of self-instruction and self-encouragement (aloud or silently) to support action | 0-NO |
| 1-YES |
| BCT22 | Provide free sunscreen and supplies | Provide the person with free sunscreen, sun hats, or other sun protection supplies | 0-NO |
| 1-YES |
| BCT23 | Provide UV index information | Provide the person with UV index information (e.g., daily reports of UV index) | 0-NO |
| 1-YES |
| BCT24 | Provide UV intensity indicator | Provide the person with a UV intensity indicator which gives a rough indication of current UV intensity (moderate, high, or extreme) | 0-NO |
| 1-YES |
| BCT25 | Priming or framing participant perception of study purpose or intervention contents | Instructing the person to think about the intervention in a particular way to shape or manipulate their perception of the study | 0-NO |
| 1-YES |
| BCT26 | Provide protective reminders | Sending text or email messages as the main mode of intervention delivery/content (e.g., general UV information and consequences, encouraging sun protection, discouraging sun exposure, etc.) | 0-NO |
| 1-YES |
| BCT27 | Take UV photograph | Taking a UV photograph of the person’s face and putting a filter on the photo to reveal underlying sun damage (distinct from feedback or tailoring) | 0-NO |
| 1-YES |
| BCT28 | Challenge the tan ideal | Encouraging the person to question the idea that one needs to be tan to look good (healthy, attractive, etc.) | 0-NO |
| 1-YES |
| BCT29 | Promote alternatives to tanning | Promote use of sunless tanning products as an alternative to UV tanning (sunless tanning lotion, spray tan, etc.) | 0-NO |
| 1-YES |
| BCT29a | Provide sunless tanning products | Providing sunless tanning product samples to participants (only considered if BCT29 was given a “1”) | 0-NO |
| 1-YES |
| BCT30 | Signposting | Giving information about options for additional support or information about where these are available (e.g., websites to purchase sunscreen or sunless tanning products)  | 0-NO |
| 1-YES |
| BCT31 | Enhance self-efficacy | Enhancing the person’s self-efficacy (e.g., messages about how easy it is to use sunscreen) | 0-NO |
| 1-YES |
| BCT32 | Challenge myths about tanning | Explicit mention of “myths” to address/dispel misconceptions in regards to sun exposure, skin cancer, and sun protection | 0-NO |
| 1-YES |
| BCT33 | Assess motivational readiness to perform behavior  | Assess participant’s level of motivation to engage in sun protection and use that information to inform the intervention | 0-NO |
| 1-YES |
| BCT34 | Identify pros and cons of behavior | Help participants arrive at a clear understanding of his or her feelings about engaging in sun protection, why its important, and identify any conflicting motivation (e.g., using a decisional balance sheet) | 0-NO |
| 1-YES |
| BCT35 | Prompt mental visualization | Instruct participants to mentally visualize or simulate performing preparatory or protective behaviors | 0-NO |
| 1-YES |
| BCT36 | Increase threat salience | Increase threat salience and/or the person’s sense of threat from skin cancer risk or damage resulting from UV exposure | 0-NO |
| 1-YES |
| BCTSUM | Count of BCTs | Count of BCTs used per test | # |

Table S3

*Risk of Bias for Each Study Included in the Review*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Random sequence generation | Allocation concealment | Blinding of participants and personnel | Blinding of outcome assessment | Incomplete outcome data | Selective reporting | Other sources of bias |
| Aarestrup et al. (2014) - girls | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Aarestrup et al. (2014) - boys | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Abar et al. (2010) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | High risk |
| Adams et al. (2009) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Adams (1996) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | High risk |
| Andersen et al. (2009) - guests  | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | High risk |
|  | Walkosz et al. (2007) - parent report of child behavior | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | High risk |
|  | Andersen et al. (2008) - employees | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | High risk |
| Aneja et al. (2012) | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | High risk |
| Armstrong et al. (2011) | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Armstrong et al. (2009) | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | Low risk |
| Baghianimoghadam et al. (2011) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Baker (2014 ) - mothers | Unclear | Unclear | Unclear | Unclear | Low risk | High risk | High risk |
| Baker (2014) - teen daughters | Unclear | Unclear | Unclear | Unclear | Low risk | High risk | High risk |
| Bauer et al. (2005) - control v. education only | Low risk | Unclear | Unclear | Low risk | Low risk | Low risk | Low risk |
| Bauer et al. (2005) - control v. education & sunscreen | Low risk | Unclear | Unclear | Low risk | Low risk | Low risk | Low risk |
| Benjes et al. (2004) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Blashill et al. (2018) - facial morphing | Low risk | Low risk | High risk | High risk | Low risk | Low risk | Low risk |
| Blashill et al. (2018) - mindfulness | Low risk | Low risk | High risk | High risk | Low risk | Low risk | Low risk |
| Borland et al. (1991) | High risk | High risk | High risk | High risk | Unclear | Low risk | Low risk |
| Bowen et al. (2018) | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk |
| Bowen et al. (2015) | Unclear | Unclear | Unclear | Unclear | High risk | Low risk | Low risk |
| Bränstrom et al. (2003) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Buller et al. (2015) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Buller et al. (2000) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | High risk |
| Buller et al. (2006) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Buller et al. (1997) | High risk | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Buller et al. (1994) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Carli et al. (2008) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Carlson (1985) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Chait et al. (2015) - dissonance/tanning condition | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | High risk |
| Chait et al. (2015) - psychoeducation condition | Unclear | Unclear | Unclear | Unclear | Low risk | High risk | High risk |
| Cheng et al. (2011) - intervention a v. control | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Cheng et al. (2011) - intervention b v. control | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Cho et al. (2018) - argument | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Cho et al. (2018) - story | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Cho (2000) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Chou (1994) - males | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Chou (1994) - females | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Clowers-Webb et al. (2006) | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Craciun et al. (2012) - volitional intervention v. control | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Craciun et al. (2012) - motivational intervention v. control | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Crane et al. (2012) | Low risk | Unclear | Unclear | Low risk | Low risk | Low risk | Low risk |
| Crane et al. (2006) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Crane et al. (1999) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Cust et al. (2016) | Low risk | Low risk | High risk | Unclear | Low risk | Low risk | Unclear |
| Darlow & Heckman (2017) - tailored text messaging | Low risk | Unclear | High risk | Unclear | Low risk | Low risk | Unclear |
| Darlow & Heckman (2017) - behavior tracking | Low risk | Unclear | High risk | Unclear | Low risk | Low risk | Unclear |
| Darlow & Heckman (2017) – tailored text messaging & behavior tracking | Low risk | Unclear | High risk | Unclear | Low risk | Low risk | Unclear |
| Detweiler et al. (1999) | Unclear | Low risk | Low risk | Low risk | Unclear | Low risk | Low risk |
| Dey et al. (1995) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | High risk |
| Dieng et al. (2016) | Low risk | Low risk | High risk | Unclear | Low risk | Low risk | Unclear |
| Dietrich et al. (2000) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Dixon et al. (2007) - standard forecast & UV vs. standard forecast control | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Dixon et al. (2007) - standard forecast & UV & protection messages vs. standard forecast control | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Dobbinson et al. (2009) | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | High risk |
| Duffy et al. (2017) - education & texts | Low risk | Unclear | Low risk | Low risk | Low risk | Unclear | Unclear |
| Duffy et al. (2017) - education & mailed sunscreen | Low risk | Unclear | Low risk | Low risk | Low risk | Unclear | Unclear |
| Duffy et al. (2017) - education & texts & mailed sunscreen | Low risk | Unclear | Low risk | Low risk | Low risk | Unclear | Unclear |
| Dukeshire (1996) (Study 2) - high fear/self focus | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Dukeshire (1996) (Study 2) - high fear/other focus | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Dukeshire (1996) (Study 2) - low fear/self focus | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Emmons et al. (2011) - education plus biometric feedback | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Emmons et al. (2011) - education plus dermatologist skin examination | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Emmons et al. (2011) - education plus biometric feedback and dermatologist skin examination | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Erkin & Temel (2017) | Low risk | Low risk | High risk | High risk | Low risk | Low risk | Low risk |
| Falk & Magnusson (2011) - Group 1 v. Group 2 | High risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Falk & Magnusson (2011) - Group 1 v. Group 3 | High risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Geller et al. (2006)  | High risk | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Geller et al. (2001) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Gibbons et al. (2005): study 1 | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Gibbons et al. (2005): study 2 | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Girgis et al. (1993) - intensive (i.e. Skinsafe) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Girgis et al. (1993) - standard lecture | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Girgis et al. (1994) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2002) - parent | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Glanz et al. (2002) - parent on behalf of child | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk |
| Glanz et al. (2001) - education only: child | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2001) - education/environment: child | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2001) - education only: staff | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2001) - education/environment: staff | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2010) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Low risk |
| Glanz et al. (2013) - parent | Low risk | Low risk | Unclear | Low risk | Low risk | Low risk | Unclear |
| Glanz et al. (2013) - parent report of child behavior | Low risk | Low risk | Unclear | Low risk | Low risk | Low risk | Unclear |
| Glanz et al. (2014) | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Glanz et al. (2013) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Glasser et al. (2010) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Glazebrook et al. (2006) | Low risk | Low risk | High risk | Unclear | Low risk | Low risk | Unclear |
| Gold et al. (2011) | High risk | Unclear | High risk | High risk | Unclear | Low risk | Unclear |
| Greene & Brinn (2003) - statistical message vs. control | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Greene & Brinn (2003) - narrative message vs. control | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Gritz et al. (2007) - parent report of child | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Gritz et al. (2007) - staff use on students | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Gritz et al. (2013) | Low risk | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Hacker et al. (2018) - SunSmart app | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk |
| Hacker et al. (2018) - UV radiation monitor | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk |
| Heckman et al. (2016) - UV4.me intervention compared to control | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Heckman et al. (2016) - assessment onlycompared to control | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Hevey & Dolan (2014) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Hillhouse et al. (2008) | Low risk | Low risk | Unclear | Unclear | Low risk | Low risk | Unclear |
| Hillhouse & Turrisi (2002) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Ho et al. (2016) | High risk | Unclear | Low risk | Unclear | Low risk | Low risk | Unclear |
| Hoffmann (1995) | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Holzhauser (2011) - collective efficacy intervention compared to delayed control | Unclear | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear |
| Holzhauser (2011) - self efficacy intervention compared to delayed control | Unclear | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear |
| Huang et al. (2013) | Low risk | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Jackson & Aiken (2006) | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | High risk |
| Karnatz (1993) - measurement & information | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Karnatz (1993) - measurement & personalized feedback | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Kiekbusch et al. (2000) - women | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Kiekbusch et al. (2000) - men | Unclear | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear |
| Koster et al. (2016) - diary | Unclear | Low risk | High risk | High risk | Low risk | Low risk | Low risk |
| Koster et al. (2016) - dosimeter | Unclear | Low risk | High risk | High risk | Low risk | Low risk | Low risk |
| Lescano (1999) - school intervention | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Lescano (1999) - school & home intervention | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Lowe et al. (1999) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear |
| Mahler (2018) | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk |
| Mahler (2017) | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk | Low risk |
| Mahler et al. (2013) - no UV photo/yes video | Unclear | Low risk | Unclear | Unclear | Low risk | Unclear | Unclear |
| Mahler et al. (2013) - yes photo/no video | Unclear | Low risk | Unclear | Unclear | Low risk | Unclear | Unclear |
| Mahler et al. (2013) - yes photo/yes video | Unclear | Low risk | Unclear | Unclear | Low risk | Unclear | Unclear |
| Mahler et al. (2003): experiment 2 - UV photo/photoaging info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2003): experiment 2 - UV photo/no info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2003): experiment 2 - no UV photo/photoaging info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2005) - intervention only | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2005) - intervention & sunless tanning lotion | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (1997) - photoaging condition | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (1997) - skin cancer condition | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2008) - basic intervention (photoaging video/UV photo) | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear | Unclear |
| Mahler et al. (2008) - basic intervention & injunctive norms | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear | Unclear |
| Mahler et al. (2008) - basic intervention & descriptive norm | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear | Unclear |
| Mahler et al. (2008) - basic intervention & injunctive & descriptive | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear | Unclear |
| Mahler et al. (2006) - UV photo/photoaging info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2006) - UV photo/no info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2006) - no UV photo/photoaging info | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2007) - no photo/video | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2007) - photo/no video | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2007) - photo/video | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mahler et al. (2010) - intervention only | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear | Unclear |
| Mahler et al. (2010) - intervention & downward comparison photos | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear | Unclear |
| Mahler et al. (2010) - intervention & upward comparison photos | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear | Unclear |
| Manne et al. (2010) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | High risk |
| Mayer et al. (2009) | Unclear | Unclear | Low risk | Low risk | Low risk | Unclear | Unclear |
| Mayer et al. (1997) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Mays et al. (2011) | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear | Unclear |
| Mermelstein et al. (1999) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Morris et al. (2014): study 1 | Low risk | Unclear | Low risk | Unclear | Low risk | Unclear | Unclear |
| Moser (2012) - emotional arousal & self efficacy | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Moser (2012) - self efficacy only | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Naldi et al. (2007) | Low risk | Low risk | Low risk | Unclear | Low risk | Low risk | Unclear |
| Novick (1997) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | High risk |
| Olson et al. (2007) | Unclear | Unclear | Unclear | Unclear | Low risk | Low risk | High risk |
| Pagoto et al. (2010) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Prochaska et al. (2005) | Unclear | Unclear | Low risk | Unclear | Low risk | Unclear | Unclear |
| Rat et al. (2014) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Recklitis et al. (2017) | Unclear | Unclear | High risk | Unclear | Low risk | Low risk | Unclear |
| Reid & Aiken (2013) | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Roberts & Black (2009) - community campaign condition | Unclear | Unclear | Low risk | Unclear | Low risk | Unclear | High risk |
| Roberts & Black (2009) - combination intervention | Unclear | Unclear | Low risk | Unclear | Low risk | Unclear | High risk |
| Robinson et al. (2014) | Low risk | Low risk | Low risk | Low risk | Low risk | Unclear | Unclear |
| Rodrigue (1996) - CPP (comprehensive prevention program) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Rodrigue (1996) - IOC (information only condition) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear |
| Roetzheim et al. (2011) | Unclear | Unclear | Unclear | Unclear | Unclear | Unclear | High risk |
| Sancho-Garnier et al. (2012) | Unclear | Unclear | Unclear | Low risk | Low risk | Unclear | Unclear |
| Schüz et al. (2013) - UV | Low risk | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear |
| Schüz et al. (2013) - SA | Low risk | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear |
| Schüz et al. (2013) - UVSA | Low risk | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear |
| Small-Johnson (1998) - child | High risk | High risk | Low risk | Unclear | Low risk | Unclear | Low risk |
| Small-Johnson (1998) - parent | High risk | High risk | Low risk | Unclear | Low risk | Unclear | Low risk |
| Small-Johnson (1998) - parent report of child behavior | High risk | High risk | Low risk | Unclear | Low risk | Unclear | Low risk |
| Stankevičiūtė et al. (2004) | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear | Unclear |
| Stapleton et al. (2010) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Low risk |
| Stapleton et al. (2015) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Low risk |
| Stock et al. (2009) - no uv/aging | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Stock et al. (2009) - no uv/cancer | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Stock et al. (2009) - uv/aging | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Stock et al. (2009) - uv/cancer | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Stump (2017) - feedback | Unclear | Unclear | High risk | Unclear | Low risk | Low risk | Low risk |
| Stump (2017) - self-monitoring | Unclear | Unclear | High risk | Unclear | Low risk | Low risk | Low risk |
| Tuong & Armstrong (2014) | Low risk | Low risk | Unclear | Unclear | Low risk | Unclear | Unclear |
| Turrisi et al. (2004) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Low risk |
| vanderPols et al. (2006) | Low risk | Low risk | Low risk | Unclear | Low risk | Unclear | Unclear |
| vanOsch et al. (2008) | Low risk | Low risk | Unclear | Unclear | Low risk | Unclear | High risk |
| Walkosz et al. (2015) - employees | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
|  | Walkosz et al. (2014) - guests | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Walsh et al. (2014) | Unclear | Unclear | Unclear | Unclear | High risk | Unclear | Unclear |
| White et al. (2018) | Low risk | Low risk | High risk | Unclear | Low risk | Low risk | Unclear |
| White et al. (2015) | Low risk | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Weinstock et al. (2002) | Unclear | Unclear | Unclear | Unclear | Low risk | Unclear | Unclear |
| Youl et al. (2015) | Low risk | Low risk | Low risk | Low risk | Low risk | Unclear | Unclear |

Figure S1

*Forest Plot for Indoor Tanning*



Figure S2

*Forest Plot for Sun Exposure*



Figure S3

*Forest Plot for Sunscreen Use*



Figure S4

*Funnel Plot for Indoor Tanning*



Figure S5

*Funnel Plot for Sun Exposure*



Figure S6

*Funnel Plot for Sunscreen Use*



**References for Studies Included in Meta-Analysis**

*Papers preceded by an asterisk report empirical studies included in the review. The other papers provided additional information relevant to coding change techniques, intervention features, or other moderators for the empirical studies.*

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