## Supplementary Materials

**Table A1**

*Design Factors of Companions of Bouquet, Mäkelä, and Schmidt (2021) with a short description.*

|  |  |  |
| --- | --- | --- |
|  | Design Factor | Short Description |
| 1 | Visual and Auditory Appearance | The visual and auditory appearance of companions in video games, including gender, age, ethnicity, status, behavior, and animations. They can also accompany the player through auditory, mental, or magical means. |
| 2 | Awareness | The ability of companions to perceive their surroundings and respond to environmental changes, including awareness of danger. They can also comment on the environment and offer help in solving problems. |
| 3 | Emotional Intelligence | The ability of companions to show and react to emotions in a way that aligns with player expectations and strengthens the bond between the player and the virtual character. |
| 4 | Social Relations | Companions' connections and interactions with other characters, including the player and other NPCs. |
| 5 | Personality | A set of unique characteristics that define a companion. This can relate to psychological trait models, impacting the game's interactions. |
| 6 | Own Agenda | A companion's personal goals or motivations for accompanying the player character. Goals can align with or be separate from the player's goals. |
| 7 | Background | The past experiences, history, and origins of a companion character in a video game. Backgrounds of companions are often revealed throughout the game. |
| 8 | Context Sensitivity | The ability of companions to respond and adapt to the current situation, including understanding when they or others are in danger and providing assistance. |
| 9 | Autonomy | The degree of a companion's independence to the player's input varies, ranging from fully autonomous companions that act independently, semi-autonomous companions influenced by the player, to non-autonomous companions fully controlled by the player. |
| 10 | Initiative and Activity | The companions' proactivity and independence manifest in self-initiated actions that occur regardless of the player's influence. |
| 11 | Communication with the Player | The way companions interact and convey information to the player through natural language, non-verbal cues, or advanced verbal communication such as deep dialogue trees. |
| 12 | Communication with other NPCs | The way companions interact and communicate with non-player characters in the game is often through scripted interactions. |
| 13 | Independence | The degree to which player characters and companions depend on each other in a game, with companions typically dependent on the player character for protection and guidance. |
| 14 | Power Dynamics | The relative levels of power and abilities between player characters and companions in a game, often with player characters being more powerful. |
| 15 | Obligations | The responsibilities and duties of player characters or companions towards each other in a game are integral to the story and potentially evolve into deeper connections. |
| 16 | Story Relevance | The degree to which a companion is relevant to and influences the story. Potentially important to both gameplay and story. |
| 17 | Gameplay Relevance | The degree to which a companion influences gameplay and is part of game mechanics, including aiding in puzzles, defeating enemies, alerting the player to nearby enemies, fetching supplies, or acting as storage and transportation. |

**Table A2**

*Items of the 20 Design Factors of Companion-Design-Scale with English Translation Recommendations*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Companion Design Factor | | Item-Nr. | | Item-Inventory |
| Appearance | 1 | | Über das Aussehen konnte ich mir ein Bild über die Persönlichkeit des Companion machen. | |
|  | | *The appearance gave me an idea of the Companion's personality.* | |
| 2 | | Anhand des Aussehens konnte ich erahnen, wie der Companion handeln wird. | |
|  | | *I knew what the Companion could and could not do from the appearance.* | |
| 3 | | Ich konnte anhand des Äußeren des Companion vorhersagen, wie er sich verhalten würde. | |
|  | | *I could predict how the Companion would act based on its appearance.* | |
| Awareness | 1 | | Der Companion verstand die Situationen und Ereignisse, die in der Umgebung stattfanden. | |
|  | | *The Companion understood the situations and events happening in the environment.* | |
| 2 | | Der Companion nahm Veränderungen in der Umgebung wahr. | |
|  | | *The Companion perceived changes in the environment.* | |
| 3 | | Der Companion war sich bewusst, was um ihn herum passierte. | |
|  | | *The Companion was aware of what was happening around him.* | |
| Emotional Intelligence | 1 | | Anhand seiner Emotionen konnte ich erkennen, was der Companion denkt. | |
|  | | *From his emotions, I could tell what the Companion was thinking.* | |
| 2 | | Ich wusste, was den Companion beschäftigte. | |
|  | | *I knew what was on the Companion's mind.* | |
| 3 | | Der Companion zeigte klare Emotionen. | |
|  | | *The Companion showed clear emotions.* | |
| 4 | | Ich wusste genau was der Companion fühlte. | |
|  | | *I knew exactly what the Companion was feeling.* | |
| Social  Relations | 1 | | Der Companion hat mit anderen sozial interagiert. | |
|  | | *The Companion interacted socially with others.* | |
| 2 | | Die soziale Beziehung zwischen dem Companion und anderen NPCs wirkte natürlich. | |
|  | | *The social relationship between the Companion and other NPCs seemed natural.* | |
| 3 | | Die soziale Beziehung zwischen dem Companion und mir wirkte natürlich. | |
|  | | *The social relationship between the Companion and me seemed natural.* | |
| 4 | | Ich hatte das Gefühl, ich kann mit dem Companion sozial interagieren. | |
|  | | *I felt like I could interact socially with the Companion.* | |
| Personality | 1 | | Der Companion hatte eine klare Persönlichkeit. | |
|  | | *The Companion had a clear personality.* | |
| 2 | | Der Companion hatte eigene Meinungen und Einstellungen. | |
|  | | *The Companion had his own opinions and attitudes.* | |
| 3 | | Ich könnte die Persönlichkeit des Companion beschreiben. | |
|  | | *I could describe the Companion's personality.* | |
| Own Agenda | 1 | | Ich kannte die Ziele des Companion. | |
|  | | *I knew the Companion's goals.* | |
| 2 | | Ich konnte die Beweggründe des Companion verstehen. | |
|  | | *I could understand the Companion's motivations.* | |
| 3 | | Ich wusste, was der Companion erreichen will. | |
|  | | *I knew what the Companion wanted to achieve.* | |
| Background Story | 1 | | Ich wusste über die Vergangenheit des Companion Bescheid. | |
|  | | *I knew about the Companion's past.* | |
| 2 | | Ich hatte das Gefühl, die Geschichte hinter dem Companion zu kennen. | |
|  | | *I felt like I knew the story behind the Companion.* | |
| 3 | | Die Hintergrundgeschichte des Companion half mir, ihn besser zu verstehen. | |
|  | | *The Companion's background story helped me understand him better.* | |
| Context  Sensitivity | 1 | | Der Companion hat angemessen auf meine Aktionen im Spiel reagiert. | |
|  | | *The Companion reacted appropriately to my actions in the game.* | |
| 2 | | Das Verhalten des Companion war schlüssig. | |
|  | | *The Companion's behavior was coherent.* | |
| 3 | | Die Handlungen des Companion waren dem Kontext angemessen. | |
|  | | *The Companion's actions were appropriate to the context.* | |
| Autonomy | 1 | | Der Companion handelte eigenständig. | |
|  | | *Companion acted independently.* | |
| 2 | | Der Companion war autonom. | |
|  | | *The Companion was autonomous.* | |
| 3 | | Der Companion konnte frei entscheiden, wie er handeln wollte. | |
|  | | *The Companion was free to decide how to act.* | |
| Initiative  and Activity | 1 | | Der Companion hatte einen eigenen Willen. | |
|  | | *The Companion had a free will.* | |
| 2 | | Der Companion zeigte Eigeninitiative. | |
|  | | *The Companion showed initiative.* | |
| Communication  with Player | 1 | | Die Art und Weise, wie der Companion kommunizierte war verständlich. | |
|  | | *The way the Companion communicated was understandable.* | |
| 2 | | Gespräche mit dem Companion waren abwechslungsreich. | |
|  | | *Conversations with the Companion were varied.* | |
| 3 | | Ich konnte mich gut mit dem Companion unterhalten. | |
|  | | *I was able to have a good conversation with the Companion.* | |
| Communication  with NPCs | 1 | | Der Companion kommunizierte mit der Umwelt. | |
|  | | *The Companion communicated with the environment.* | |
| 2 | | Ich glaube, der Companion könnte sich mit anderen gut unterhalten. | |
|  | | *I think the Companion could communicate well with others.* | |
| Story  Relevance | 1 | | Der Companion war ein integraler Bestandteil für die Hauptgeschichte des Spiels. | |
|  | | *The Companion was an integral part of the main story of the game.* | |
| 2 | | Der Companion hat die Geschichte des Videospiels geprägt. | |
|  | | *The Companion has characterized the story of the video game.* | |
| 3 | | Der Companion hatte Einfluss auf die Geschichte im Videospiel. | |
|  | | *The Companion had an impact on the story in the video game.* | |
| Gameplay  Relevance | 1 | | Der Companion war für das Gameplay relevant. | |
|  | | *The Companion was relevant to the gameplay.* | |
| 2 | | Der Companion war ein wichtiger Teil der Spielmechanik. | |
|  | | *The Companion was an important part of the game mechanics.* | |
| Player  Dependence | 1 | | ... hat der Companion mich gebraucht. | |
|  | | *... the Companion needed me.* | |
| 2 | | ... war der Companion auf mich angewiesen. | |
|  | | *... the Companion depended on me.* | |
| Companion  Dependence | 1 | | … habe ich den Companion gebraucht. | |
|  | | *... I needed the Companion.* | |
| 2 | | … habe ich die Hilfe des Companion benötigt. | |
|  | | *... I needed the Companion's help.* | |
| Player Power | 1 | | ... hatte ich die besseren Fähigkeiten. | |
|  | | *... I had the better skills.* | |
| 2 | | ... war ich dominanter. | |
|  | | *... I was more dominant.* | |
| 3 | | ... war ich kompetenter. | |
|  | | *... I was more competent.* | |
| Companion Power | 1 | | … war der Companion stärker. | |
|  | | *... the Companion was stronger.* | |
| 2 | | … hatte der Companion die besseren Fähigkeiten. | |
|  | | *... the Companion had the better skills.* | |
| 3 | | … war der Companion kompetenter. | |
|  | | *... the Companion was more competent.* | |
| Player  Obligation | 1 | | ... war ich verantwortlich für seine Sicherheit. | |
|  | | *... I was responsible for his safety.* | |
| 2 | | ... beschützte ich ihn anstatt er mich. | |
|  | | *... I protected him instead of him protecting me.* | |
| Companion  Obligation | 1 | | … war der Companion für meine Sicherheit verantwortlich. | |
|  | | *... the Companion was responsible for my safety.* | |
| 2 | | … beschützte der Companion mich anstatt ich ihn. | |
|  | | *... the Companion protected me instead of me protecting him.* | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Design Factor | 1  *r* | 2  *r* | 3  *r* | 4  *r* | 5  *r* | 6  *r* | 7  *r* | 8  *r* | 9  *r* | 10  *r* | 11  *r* | 12  *r* | 13  *r* | 14  *r* | 15  *r* | 16  *r* | 17  *r* | 18  *r* | 19  *r* | 20  *r* |
| 1 AP | **.84** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 AW | .14\* | **.88** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 EI | .39\*\*\* | .55\*\*\* | **.89** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 SoR | .29\*\*\* | .54\*\*\* | .77\*\*\* | **.86** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 PS | .31\*\*\* | .44\*\*\* | .77\*\*\* | .70\*\*\* | **.89** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 OA | .27\*\*\* | .44\*\*\* | .61\*\*\* | .57\*\*\* | .60\*\*\* | **.86** | — |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 BG | .21\*\*\* | .38\*\*\* | .58\*\*\* | .53\*\*\* | .61\*\*\* | .66\*\*\* | **.91** | — |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 CS | .17\*\* | .63\*\*\* | .55\*\*\* | .61\*\*\* | .48\*\*\* | .51\*\*\* | .40\*\*\* | **.83** | — |  |  |  |  |  |  |  |  |  |  |  |
| 9 AU | .20\*\* | .32\*\*\* | .43\*\*\* | .39\*\*\* | .42\*\*\* | .35\*\*\* | .27\*\*\* | .30\*\*\* | **.87** | — |  |  |  |  |  |  |  |  |  |  |
| 10 IA | .12 | .51\*\*\* | .63\*\*\* | .54\*\*\* | .60\*\*\* | .42\*\*\* | .35\*\*\* | .40\*\*\* | .70\*\*\* | **.85** | — |  |  |  |  |  |  |  |  |  |
| 11 CWP | .26\*\*\* | .49\*\*\* | .70\*\*\* | .72\*\*\* | .71\*\*\* | .59\*\*\* | .55\*\*\* | .55\*\*\* | .44\*\*\* | .53\*\*\* | **.88** | — |  |  |  |  |  |  |  |  |
| 12 CWN | .31\*\*\* | .57\*\*\* | .73\*\*\* | .73\*\*\* | .69\*\*\* | .56\*\*\* | .50\*\*\* | .50\*\*\* | .48\*\*\* | .58\*\*\* | .71\*\*\* | **.84** | — |  |  |  |  |  |  |  |
| 13 SR | .15\* | .42\*\*\* | .48\*\*\* | .46\*\*\* | .41\*\*\* | .44\*\*\* | .45\*\*\* | .37\*\*\* | .29\*\*\* | .41\*\*\* | .43\*\*\* | .49\*\*\* | **.91** | — |  |  |  |  |  |  |
| 14 GR | .02 | .29\*\*\* | .18\*\* | .27\*\*\* | .20\*\* | .31\*\*\* | .37\*\*\* | .33\*\*\* | .05 | .15\* | .22\*\*\* | .17\*\* | .53\*\*\* | **.93** | — |  |  |  |  |  |
| 15 PI | .18\*\* | .11 | .20\*\* | .17\*\* | .12 | .17\*\* | .22\*\*\* | .12 | .05 | .11 | .16\*\* | .15\* | .33\*\*\* | .14\* | **.90** | — |  |  |  |  |
| 16 CI | -.09 | .12 | -.00 | .03 | .01 | .04 | .06 | .16\* | .03 | .06 | .03 | -.00 | .25\*\*\* | .41\*\*\* | -.06 | **.92** | — |  |  |  |
| 17 PP | .11 | -.11 | -.01 | -.01 | -.02 | -.12 | -.04 | -.04 | -.10 | -.07 | -.11 | -.04 | -.17\*\* | -.14\* | .28\*\*\* | -.32\*\* | **.84** | — |  |  |
| 18 CP | -.04 | -.01 | -.01 | -.03 | .00 | .11 | .12 | .06 | .12 | .08 | .07 | -.02 | .14\* | .22\*\*\* | -.18\*\* | .40\*\*\* | -.55\*\*\* | **.85** | — |  |
| 19 PO | .14\* | .08 | .22\*\*\* | .15\* | .14\* | .09 | .23\*\*\* | .01 | .09 | .15\* | .12 | .19\*\* | .20\*\* | -.01 | .54\*\*\* | -.17\*\* | .34\*\*\* | -.22\*\*\* | **.89** | — |
| 20 CO | .01 | -.04 | -.09 | -.05 | -.08 | -.01 | -.07 | .01 | .09 | .01 | -.04 | -.10 | -.04 | .13\* | -.19\*\* | .42\*\*\* | -.22\*\*\* | .49\*\*\* | -.32\*\*\* | **.88** |

**Table A3**

*Correlation Matrix and √AVE-Scores (in bold) for the 20 Companion Design Factors*

*Note.* \**p* < .05. \*\**p* < .01. \*\*\**p* < .001;AP = Appearance, AW = Awareness, EI = Emotional Intelligence, SoR = Social Relations, PS = Personality, OA = Own Agenda, BG = Background Story, CS = Context Sensitivity, AU = Autonomy, IA = Initiative and Activity, CWP = Communication with Player, CWN = Communication with NPCs, SR = Story Relevance, GR = Gameplay Relevance, PI = Player Independence, CI = Companion Independence, PP = Player Power, CP = Companion Power, SO = Player Obligation, CO = Companion Obligation.