



Eye protection starts in childhood
Responsibility Parents and Teachers Cannot Shirk
保護眼睛從孩子開始
家長教師不能夠推卸的責任

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Responsibility Parents and Teachers Cannot Shirk.



Participants

The questionnaire survey was conducted in June 2021 on 6498 Primary (P.) 3, 4249 P. 6, and 6228 Secondary (S.) 3 students and their parents. They came from 108 primary and 103 secondary schools. In addition, 736, 547, and 730 teachers who mainly taught P.3, P.6, and S.3, respectively, also completed another questionnaire. The schools were stratified by financial type and school size (number of students in the schools); with appropriate sampling weights added, our results reported below represented the Hong Kong school population.

The Questions

Parents were asked to report (i) the various degrees of vision complications their children might have in both eyes, (ii) whether their children's vision improved or deteriorated during the pandemic, (iii) their own vision conditions, and (iv) some vision-related information (outdoor activities under sunlight). Students were asked whether teachers and parents reminded them to take good care of their eyes and let their eyes take a rest after a certain period of near work. Teachers and principals were asked whether they reminded their students to take good care of their eyes and let their eyes take a rest after a certain period of near work.

1. How many pupils were wearing glasses and had different vision complications?

No refractive errors (-0.5 diopter or less in myopia/hyperopia, astigmatism, or other complications) (Figure 1):

- 50% of P.3, 34% in P.6, and 24% in S.3.
- Parents themselves: 70%

Wear Glasses:

- P.3 30%, P.6 51%, S.3 66%

2. Did pupils and parents of older pupils have more severe vision complications?

Parents:

- P.3, P.6, and S.3 parents similar (Figures 3-6)
- Except that parents of younger pupils (P.3, P.6 parents) tended to have 2%-4% more low or mild myopia than parents of older (S.3) ones
- Other refractive errors and eye conditions relative stable across parents of young/old pupils

Pupils

Myopia (short-sightedness)

- Affected most pupils (Figure 2)
- More severe in older pupils.
- Slightly less P.6 students had myopia than their parents
- More S.3 pupils had myopia than their parents, though students mostly had low or moderate myopia

Hyperopia (long-sightedness)

- The number of pupils affected by hyperopia was low (Figure 3)
- Slightly more than parents at P.6
- Pupils outnumbered parents by doubling or tripling the parents' serious hyperopia at S.3

Astigmatism (imperfect cornea curvature)

- More severe pupil cases at higher educational levels also had astigmatism (Figure 4)
- Though there were less than 10% moderate and more severe astigmatism, at S.3, there were close to 40% low-level astigmatism
- In general, S.3 pupils had more low- and mid-level astigmatism than their parents.

Manifest squint (eyes misalignment)

- Did not become more severe in older pupils (Figure 5)
- Identification was early and successful in the Hong Kong medical and health system
- Consistently at about 2.5% among the pupils in this study and more than the 0.6%-0.7% among the parents. It could be an underestimation of the parents' problems, or their children's conditions were genuinely more severe

Amblyopia (reduced vision)

- The condition did not increase too much in older pupils (Figure 6)
- Consistently 2%-3% of pupils with amblyopia
- More than the parents who had 1%-1.5% amblyopia. It could be an underestimation of the parents, or their children's conditions were genuinely more severe

3. Were all pupils with refractive errors or other eye problems wearing glasses?

- At all educational levels, there was always a sizeable number of pupils who did not wear glasses but reported various vision complications, notably astigmatism, myopia, and hyperopia (Figures 7-9, 12)
- Parents should be alerted to have regular vision examinations for their children and provide them with suitable glasses
- A pupil could have multiple vision complications; parents should pay extra attention to the most appropriate glasses for their children or seek ophthalmic attention.

4. Did socioeconomic status, academic achievement, and gender affect vision?

- In general, the relations between vision conditions and socioeconomic status, academic achievement, and gender were weak or nonsystematic; pupils from all backgrounds were affected by vision complications (Figures 10-11)
- A small exception was that pupils with higher academic performance were slightly more likely to have myopia at all educational levels ($\beta = 0.09, 0.16, 0.12$)
- Parents with different backgrounds and teachers in all schools should be alerted of students' vision conditions and take action before it is too late.

5. Would there be similar vision problems between parents and children?

- Yes, parents' myopia, hyperopia, astigmatism, manifest squint, and amblyopia problems were strongly linked to similar vision complications in their children (Figures 13-14)
- These relations were generally stronger than the effects of their socioeconomic status and other family conditions

6. Were teachers and parents advising the students to take care of their eyes and let the eyes take rest?

- As reported by the pupils, (i) there was no substantially more advice by teachers or parents during the Covid-19 pandemic (June 2021), (ii) parents gave more advice than teachers, (iii) P.3, P.6 pupils received more advice than S.3 pupils although older pupils had more vision problems (Figures 15-16)
- As reported by principals and teachers, (i) there was drastically much more advice during the pandemic (June 2021) than before (but not confirmed by the pupils), (ii) there was less advice for S.3 than with P.3, P.6 pupils.
- There should be large campaigns advising students directly, encouraging parents and schools to remind students to take care of their eyes and let them rest periodically after near work. This was notably lacking for secondary pupils who had severe vision complications.

7. Did higher socioeconomic status, better academic achievement pupils, and boys/girls receive more advice to take care of their eyes?

- Higher (or lower) socioeconomic status parents and parents of boys (or girls) were not giving more (or less) advice to their children on eye care and taking rest after near work (Figures 17-18)
- But before the pandemic (June 2021), P.3 parents with children of better academic achievement, and during the pandemic (June 2021) for all parents whose children were doing better academically, these parents did give more advice on eye protection
- So, in a sense, when pupils worked harder with better academic performance, parents gave slightly more advice. But by and large, parents of low or high socioeconomic status, of both girls and boys, should be reminded to advise their children on the necessity to take care of their eyes. The pattern of letting the eyes rest after near work was similar.

8. Did student vision problems improve or worsen during the pandemic (June 2021)?

- Parents reported whether their children's eyesight worsened or improved during the pandemic (June 2021; Figure A19). About 50% of parents reported there was no noticeable difference (46%-54%) or better (2%-4%), and another half (43%-51%) believed their eyesight became worse. Pupils of higher (or lower) socioeconomic, better (or worse) academic performance, or boys (or girls) did not perceive their eyesight to be better (or worse) (Figure 19)
- In brief, many parents (half of them) were aware of their children's worsened eyesight, but obviously, this did not lead to more advice to their children to take care of their eyes.

Conclusion and Recommendation

- Results showed that our parents of younger pupils (P.3) had more myopia problems than parents of older ones P.6 and S.3. Otherwise, all parents had similar vision problems.
- About half of P.3 pupils had refractive errors, which increased to two-thirds at P.6 and three-quarters at S.3. Regarding myopia, P.6 pupils were as bad as their parents, while S.3 students were worse than their parents. Hyperopia kept at a low percentage, but P.6 pupils were as serious as their parents, while S.3 pupils were much more severe than their parents.
- Heredity may contribute a small part to children's vision conditions, but the public should be educated that vision complications affect all low/high socioeconomic students, low/high achievers, and boys/girls; despite high achievers having slightly

more myopia errors

- Pupils might have multiple refractive problems, and the provision of the appropriate glasses is essential. We also noted that pupils reported having refractive problems but were not provided with proper glasses. Public education and proper professional checking are much needed.
- Parents might be giving eye-care and eye-rest advice, but they gave up advising when pupils were at secondary schools.
- Teachers and principals claimed they gave multifold extra advice on eye care during the pandemic (June 2021). Disappointingly, this was not affirmed in pupils' responses. Although parents of high-achieving pupils might give more eye-care advice, the higher socioeconomic status parents with more education were not given more guidance on eye care.
- Around half of the parents reported their children's vision problems deteriorated in the pandemic (June 2021), but few took any remedial action.
- Vision and care of the eyes are of great importance worldwide. In some cities, it is a key performance indicator of a school, with professionals going to each school to take readings from pupils directly. To a certain extent, Hong Kong parents and teachers were aware of the vision problem before and during the pandemic (June 2021). Still, few took action seriously to advise their children to take more care or let their eyes rest periodically. Large campaigns with help from medical professionals, regular classroom eye-care exercises, and frequent professional examinations are definitely needed.

參加者

是次問卷調查於 2021 年 6 月進行，期間有 6498 名小三(P.3)、4249 名小六(P.6)、6228 名中三(S.3)學生及其家長參加，他們分別來自 108 所小學和 103 所中學。此外，以 P.3、P.6 和 S.3 為主要任教級別的 736、547 和 730 名教師也完成了另一份相關的問卷調查。學校按資助種類和學校規模（在校學生人數）進行分層抽樣，並加上適當的權重，是以本報告的結果充分代表香港的學校人口。

調查內容及分析

問卷調查請家長提供了下述資料：(i) 孩子雙眼視力可能出現不同程度的問題/症狀；(ii) 孩子的視力在 2019 冠狀病毒病疫情期間有否改善或惡化；(iii) 家長的視力，以及 (iv) 一些與孩子視力相關的信息（如，陽光下的戶外活動）。學生、校長及教師亦被問及校方和家長是否有提醒孩童注意保護眼睛，在近距離工作一段時間後需讓眼睛休息。

1. 有多少學生因各種視力問題而需配戴眼鏡？

無屈光不正問題（等於/少於-0.5D 近視或遠視、散光或其他視力症狀）（圖 1）：

- 學生：小三 (50%)；小六 (34%)；中三 (24%)
- 父母：(70%)

需配戴眼鏡：

- 學生：小三 (30%)；小六 (51%)；中三 (66%)

2. 年齡較大的學生及其家長會否出現相對嚴重的視力問題？

家長：

- 小三、小六 和 中三學生父母的情況相似（圖 3-6）
- 低年級學生家長(小三及小六)中，患有輕度或中度近視的人，比高年級學生家長(中三)多 2%-4%
- 其他屈光不正問題及視力症狀，在各級學生家長中沒有太大差異

學生：

近視

- 大多數學生患有近視（圖 2）
- 年齡較大的學生情況更嚴重
- 小六學生的近視人數略低於其父母
- 中三學生的近視人數高於其父母，但大多屬於輕度或中度近視

遠視

- 患有遠視的學生人數較少（圖 3）
- 小六學生的遠視人數略高於其父母
- 中三深度遠視的學生人數高於其父母，人數是家長的 2-3 倍

散光

- 患有嚴重視力問題的高年級學生多數也有散光（圖 4）
- 儘管中度和重度散光的學生不到 10%，但中三學生當中有接近 40% 的人患有輕度散光
- 一般來說，患有輕度及中度散光的中三學生人數比他們的父母多

顯斜視

- 學生不會因年齡增長而出現更嚴重的斜視問題（圖 5）
- 香港醫療及衛生系統能有效地及早識別斜視患者
- 在本研究中，各級患有斜視的學生維持在 2.5% 左右，比其父母的 0.6%-0.7% 為多，反映家長斜視問題可能被低估，或孩子斜視問題嚴重了

弱視

- 高年級學生的弱視人數沒有明顯增長（圖 6）
- 各級均有 2%-3% 的學生患有弱視
- 各級患有弱視的學生人數比其父母多 1%-1.5%，反映家長弱視問題可能被低估，或孩子弱視問題嚴重了

3. 所有患有屈光不正或其他視力問題的學生都有配戴眼鏡嗎？

- 各級均有相當數量的學生報稱患有視力問題卻並沒有配戴眼鏡，尤其是散光、近視和遠視患者 (圖 7-9、12)
- 家長應定期檢查孩子的視力狀況，並讓他們配戴合適的眼鏡
- 學生可以同時出現多種視力問題，家長應為孩子選擇最合適的眼鏡或尋求眼科專業人員的協助

4. 視力會否受社經地位、學業成績及性別影響？

- 一般而言，視力狀況與社經地位、學業成績和性別之間並無顯著關係。不同背景的學生均會受視力問題困擾 (圖 10-11)
- 其中，各級學業成績較高的學生患有近視的可能性較高 (beta = 0.09, 0.16, 0.12)
- 應提醒所有學校教師及家長多關注學生的視力狀況，並於問題發生時及早進行調理

5. 父母和孩子之間會否出現相同的視力問題？

- 會，父母若患有近視、遠視、散光、顯斜視或弱視問題，他們的孩子大多也有同類的視力症狀 (圖 13-14)
- 這關係比其社經地位及其他家庭條件的影響更強

6. 教師和家長有否提醒學生注意保護眼睛，並適時讓眼睛休息？

- 從學生調查中得知：(i) 在 2019 冠狀病毒病疫情期間 (2021 年 6 月)，教師或家長沒有額外提醒學生保護眼睛；(ii) 來自家長的提醒比教師多；(iii) 儘管高年級學生(中三)有更多視力問題，低年級學生(小三、小六)卻比高年級學生獲得更多提醒 (圖 15-16)
- 根據校長和教師的調查：(i) 在 2019 冠狀病毒病疫情期間 (2021 年 6 月) 他們有特別提醒學生護眼 (但沒有得到學生證實)；(ii) 對高年級學生(中三)的提醒少於對低年級學生(小三、小六)
- 應該開展大型的專題活動引起學童關注，並鼓勵家長和學校多提醒學生注意保護眼睛，讓他們在近距離工作期間適時休息，這對患有嚴重視力問題的中學生來說尤其缺乏

7. 擁有更高社經地位、學業成績較好的學生會否得到更多的保護眼睛的建議？

男女之間會否有差異？

- 不論是從社經地位（高或低）或從性別（男或女）的角度，父母均未向他們的孩子給予更多（或更少）護眼及近距離工作後需作休息的建議（圖 17-18）
- 在 2019 冠狀病毒病疫情之前（2021 年 6 月之前）學業成績較好的小三學生，以及 2019 冠狀病毒病疫情期間（2021 年 6 月）學業成績較好的各級學生，其父母均給予較多護眼方面的建議
- 在一定程度上，當學生得更好的學業成績而用功學習，父母會稍微給予多些護眼方面的建議。總括來說，無論社經地位如何或屬於哪個性別，父母也應教導孩子護眼的必要性，近距離工作後需適時讓眼睛休息亦如是。

8. 在 2019 冠狀病毒病疫情期間（2021 年 6 月），學生的視力問題改善了還是惡化了？

- 調查中，家長提供了在疫情期間他們孩子的視力狀況（2021 年 6 月；圖 A19）。大約 50% 的受訪家長指當中沒有明顯差異（46%-54%）或視力變好（2%-4%）的情況。另一半家長（43%-51%）認為孩子的視力變差了。社經地位較高（或較低）、學習成績較好（或較差）、男孩（或女孩）的比較中，並未有某種類別學生認為他們的視力變得更好（或更差）（圖 19）
- 簡而言之，許多父母（半數受訪者）意識到孩子的視力正在惡化，但顯然這並沒有促使他們給予孩子更多護眼的建議

結論和建議

- 結果顯示，所有父母都有類似的視力問題。較年幼學生的父母（小三）比較年長學生的父母（小六、中三）出現更多近視患者
- 小三學生中，大約有一半患有屈光不正，至小六時人數增加到三分之二，到中三則增加到四分之三。近視方面，小六的學生和他們父母近視問題一樣嚴重，而中三的學生則比他們的父母更嚴重。遠視患者雖佔較少百分比，但小六學生和他們父母的遠視問題一樣嚴重，而中三學生的情況則比他們的父母嚴重得多
- 雖然遺傳可能對學童的視力有小部分影響，但市民大眾需明白，儘管近視多出現在學業成績較好的學生身上，但視力問題一直對各個背景的學生造成影響，不論他們是哪個性別，家庭社經地位及學業成績如何（高或低）

- 學生可能同時出現多種屈光不正問題，因此為他們提供合適的眼鏡至關重要。研究顯示部分學生雖患有屈光不正，但卻沒有配置合適的眼鏡。因此，公眾教育和專業檢查是現時迫切需要的
- 父母曾在孩子年幼時給予眼睛護理和眼睛休息方面的建議，但這關注在孩子上中學後便停止了
- 教師和校長聲稱他們在疫情期間（2021 年 6 月）就眼睛護理提供了額外關注及建議。令人失望的是，這在學生的回應中並沒有得到證實。雖然成績優異的學生會從父母那裏得到更多眼睛護理的建議，但社經地位較高、受教育程度較高的父母並沒有為子女提供較多的眼睛護理指導
- 約一半的父母指出他們孩子的視力在疫情期間（2021 年 6 月）漸趨惡化，但很少父母因此採取補救措施
- 視力和眼睛護理在全球議題中佔一重要席位。它在部分城市更是學校的一項關鍵績效指標，眼科專業人士甚至會到訪每所學校，直接從學生那裡獲取視力讀數。在一定程度上，香港家長和教師在疫情前和期間（2021 年 6 月）均有關注學生的視力問題。儘管如此，很少有人認真採取行動，例如建議他們的孩子/學生多加注意保護眼睛，或定期讓他們的眼睛休息。有見及此，增加眼科專業檢查的頻率、定期進行課堂眼睛保健練習，以及與醫療專業人員一起組建大型眼睛護理的公民教育活動對提升大眾護眼意識均是必不可少的

Figure 1. Percentages of Pupils, Mothers and Fathers Wearing Glasses or Without Vision Complications (all reported by parents).

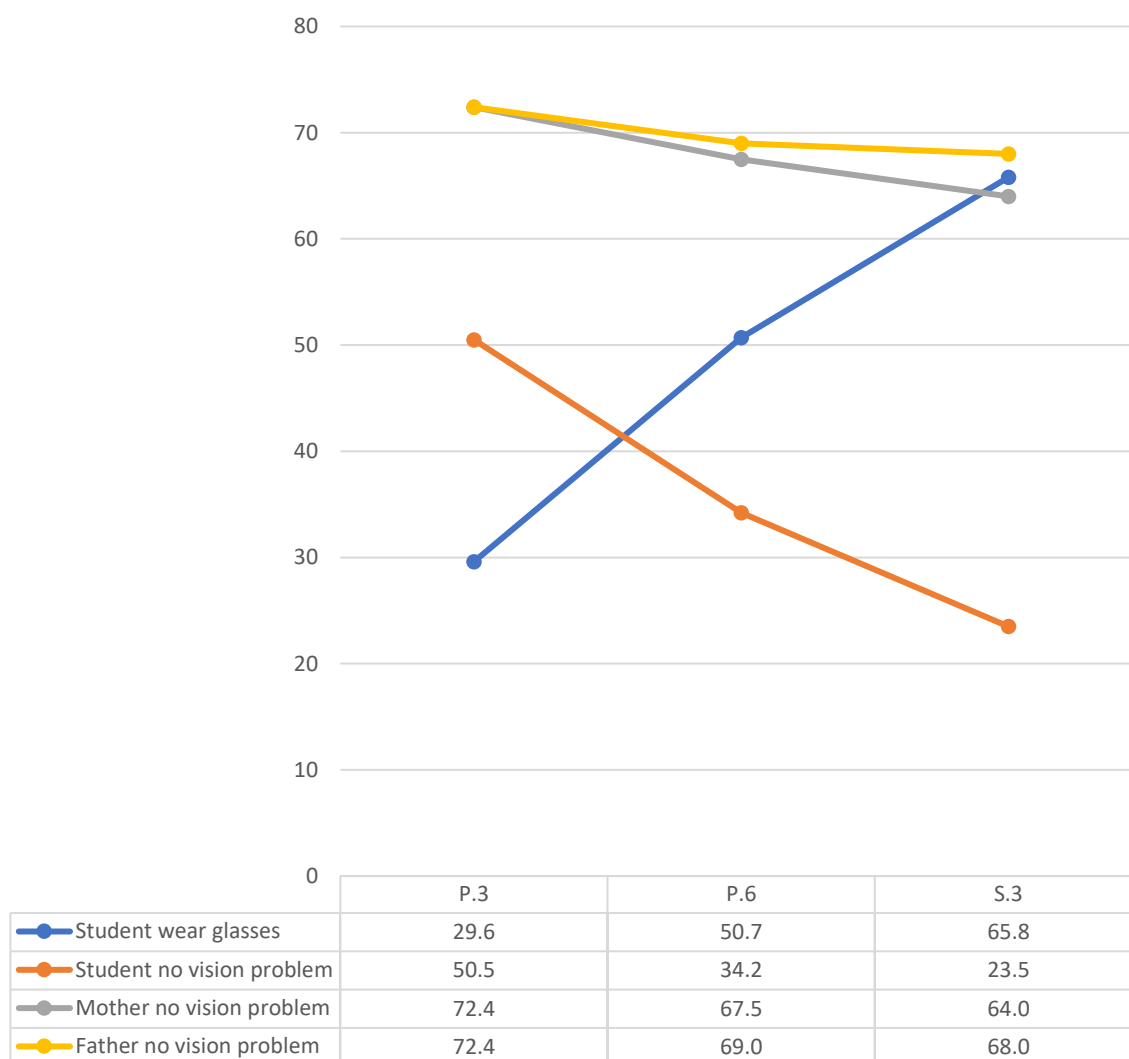
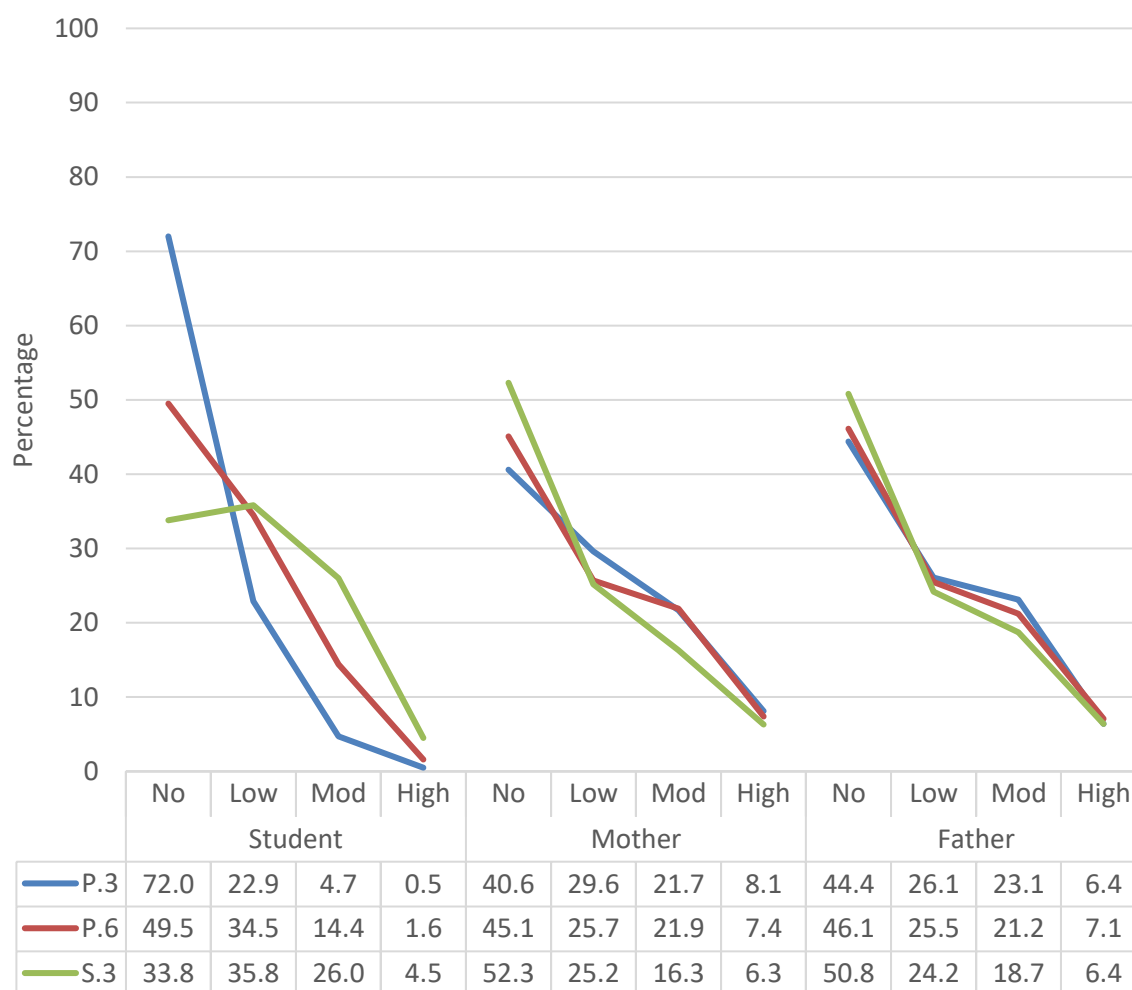


Figure 2. Percentages of Pupils, Mothers, and Fathers with Myopia (near-sightedness).



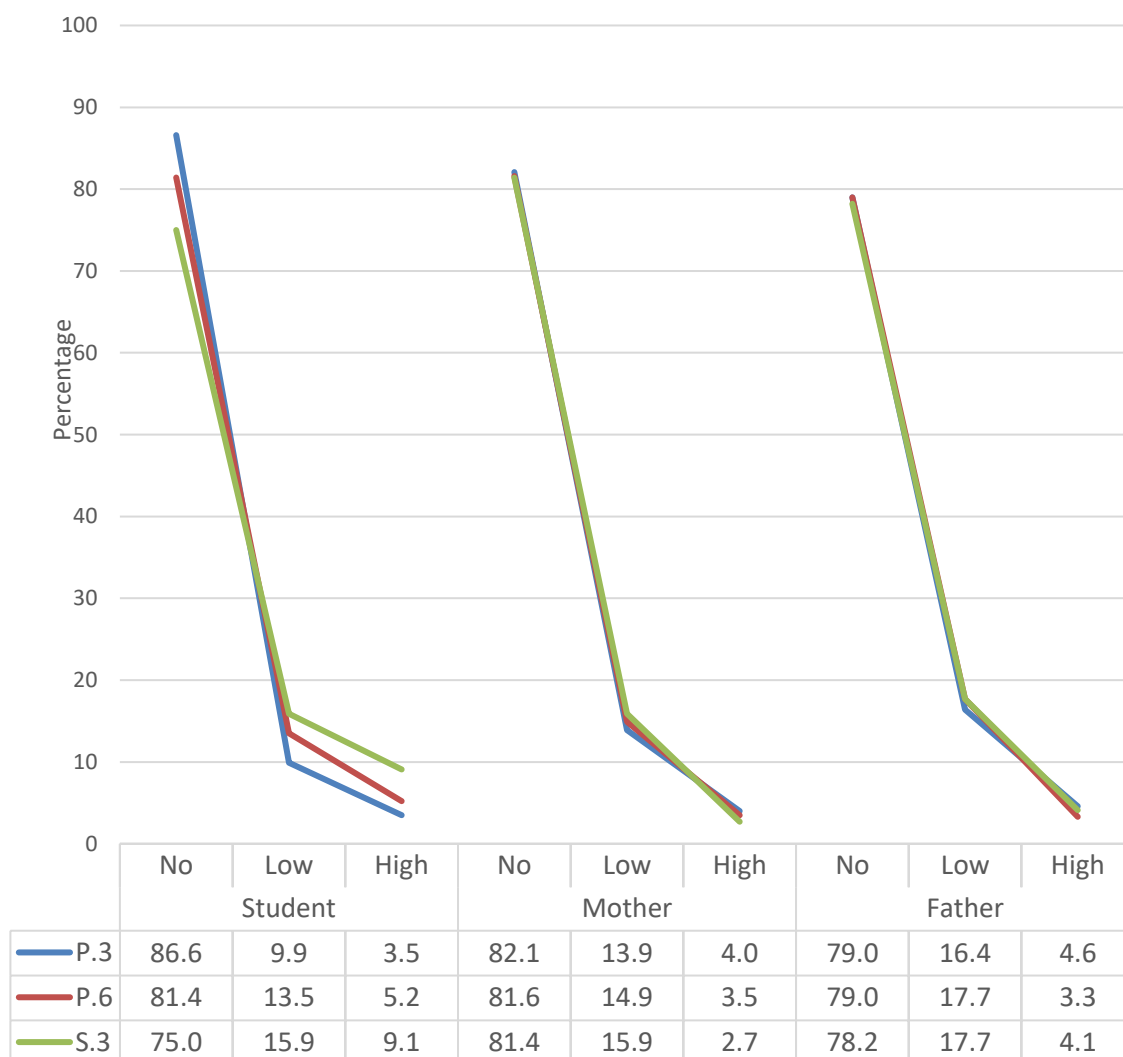
Note.

Low = -0.5 to -3 diopters

Moderate = -3.25 to -6 diopters

High = severer than -6 diopters

Figure 3. Percentages of Pupils, Mothers, and Fathers with Hyperopia (far-sighted).

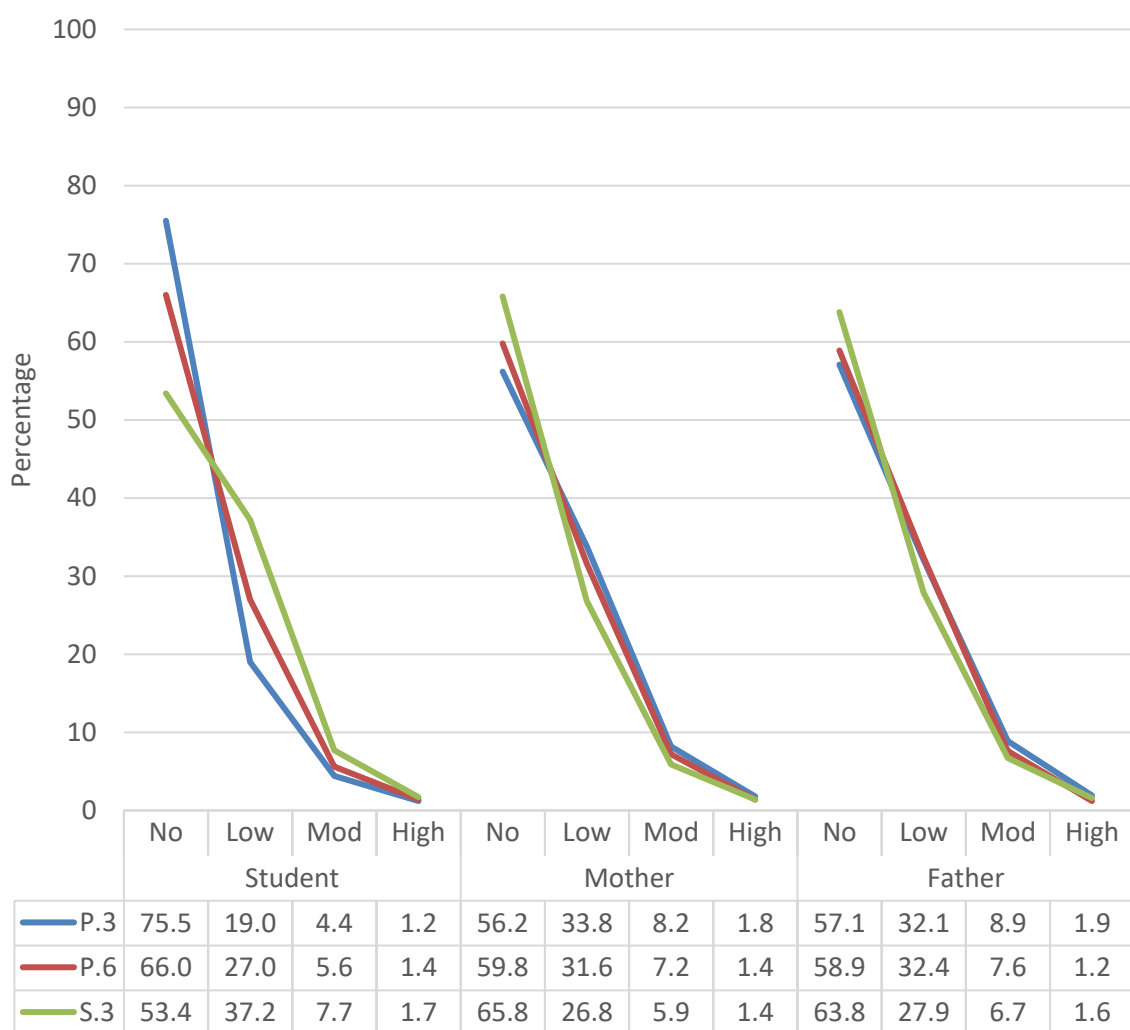


Note.

Low = 0.5 to 2 diopters

High = severer than 2 diopters

Figure 4. Percentages of Pupils, Mothers, and Fathers with Astigmatism (imperfect cornea curvature).



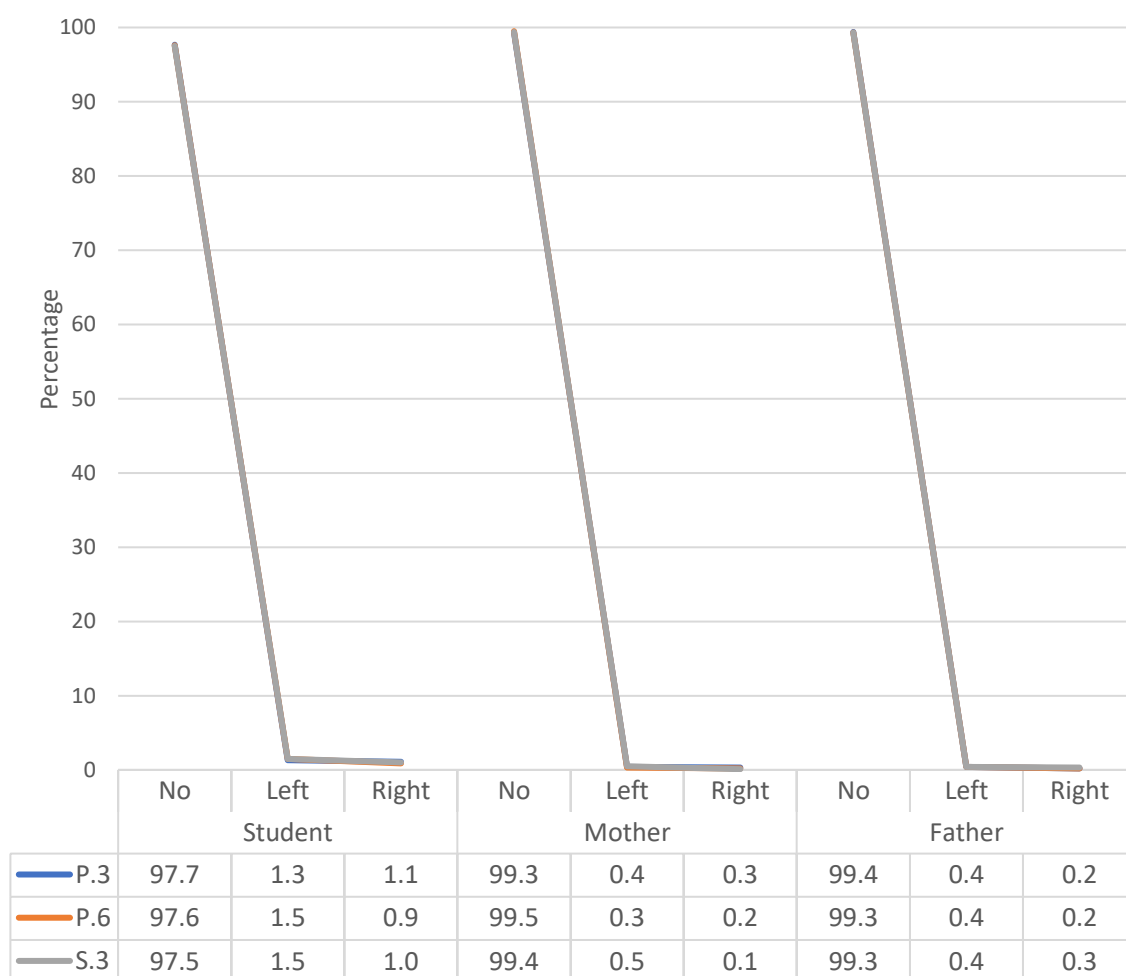
Note.

Low = 0.5 to 1.5 diopters

Moderate = 1.75 to 3 diopters

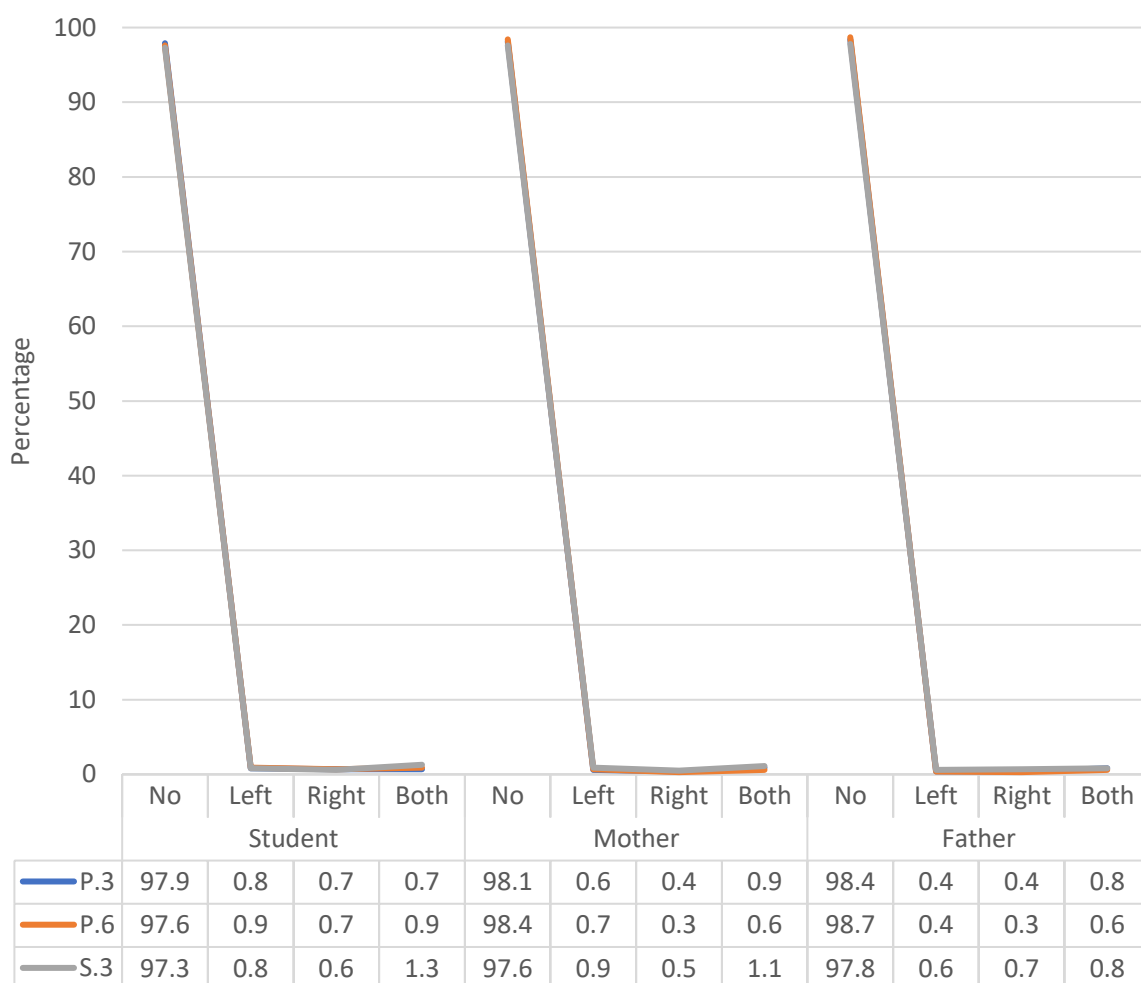
High = severer than 3 diopters

Figure 5. Percentages of Pupils, Mothers, and Fathers with Manifest Squint (both eyes do not look directly and accurately at the object at the same time).



Note. Answers were yes or no to each eye.

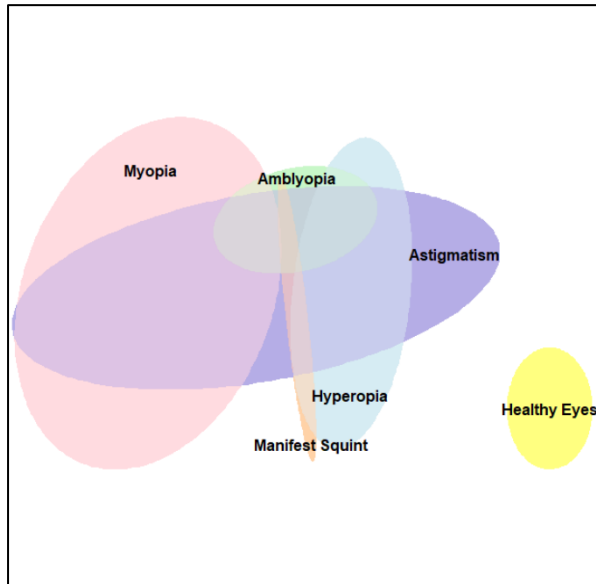
Figure 6. Percentages of Pupils, Mothers, and Fathers with Amblyopia (lazy eye).



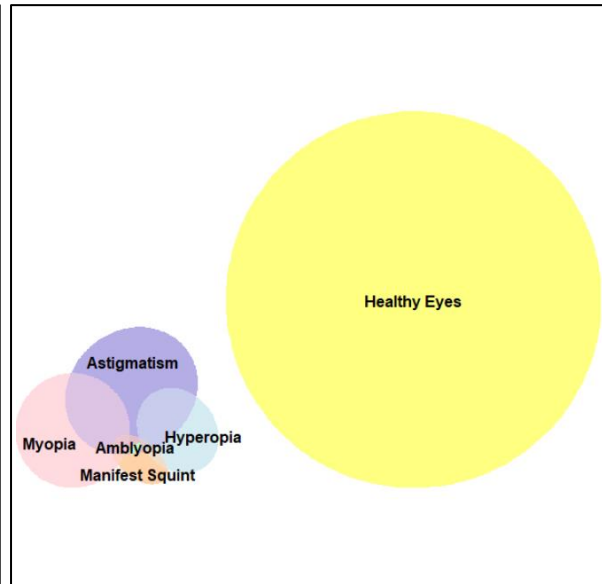
Note. Answers were yes or no to each eye.

Figure 7. Percentages of Pupils Wearing or not Wearing Glasses With Various Vision Complications (P.3).

For Students Wearing Eyes



For Students Not Wearing Eyes

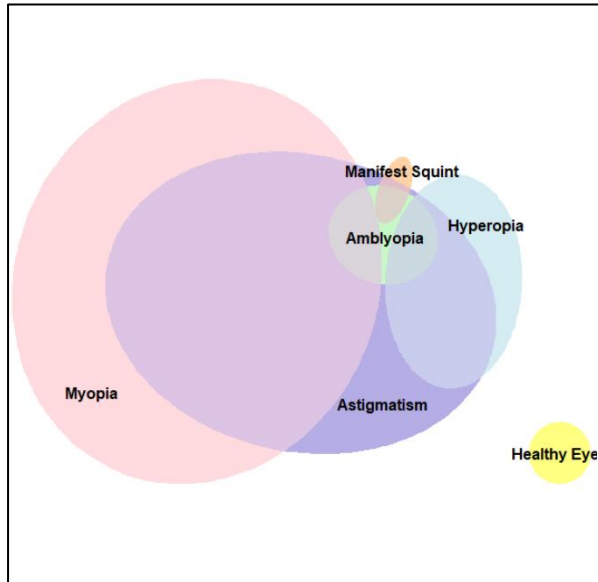


Note.

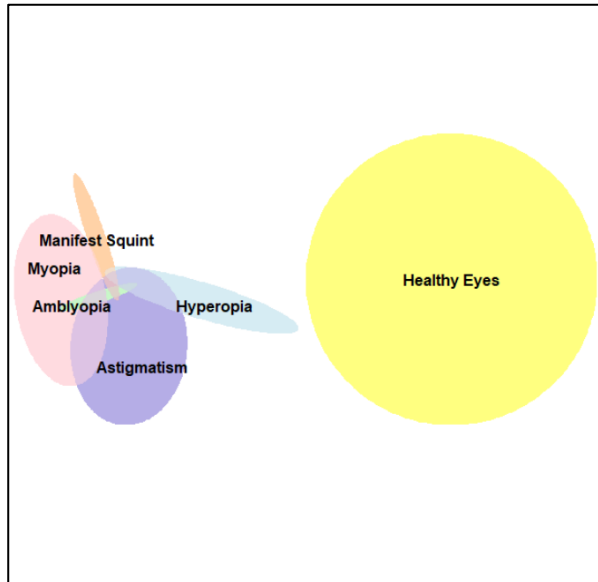
- Yellow = Healthy Eyes
- Pink = Myopia
- Blue = Hyperopia
- Slateblue = Astigmatism
- Tan = Manifest Squint
- Green = Amblyopia

Figure 8. Percentages of Pupils Wearing or not Wearing Glasses With Various Vision Complications (P.6).

For Pupils Wearing Eyes



For Pupils Not Wearing Eyes

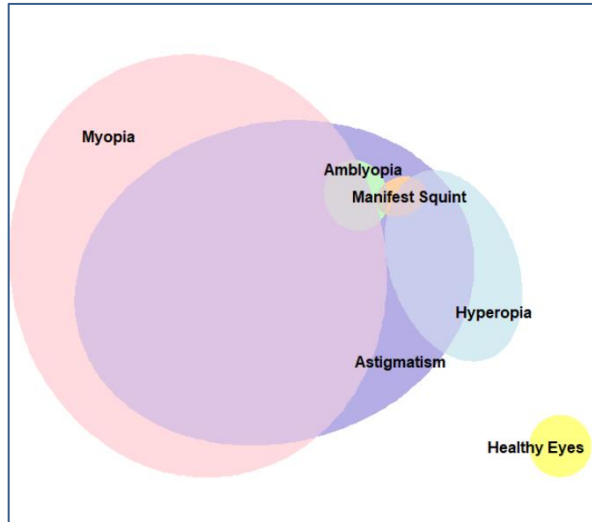


Note.

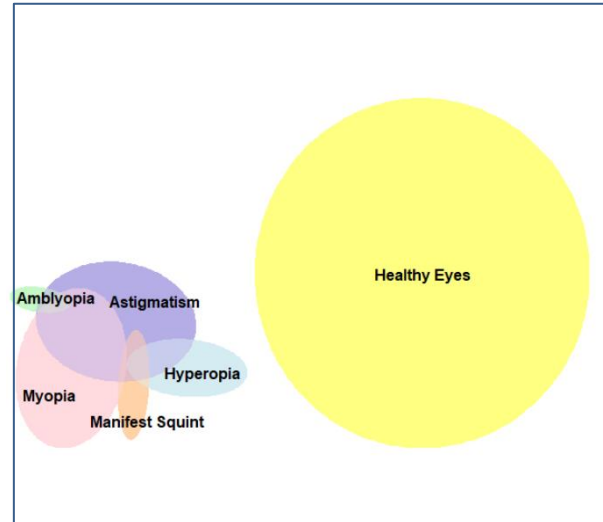
- Yellow = Healthy Eyes
- Pink = Myopia
- Blue = Hyperopia
- Slateblue = Astigmatism
- Tan = Manifest Squint
- Green = Amblyopia

Figure 9. Percentages of Pupils Wearing or not Wearing Glasses With Various Vision Complications (S.3).

For Pupils Wearing Eyes



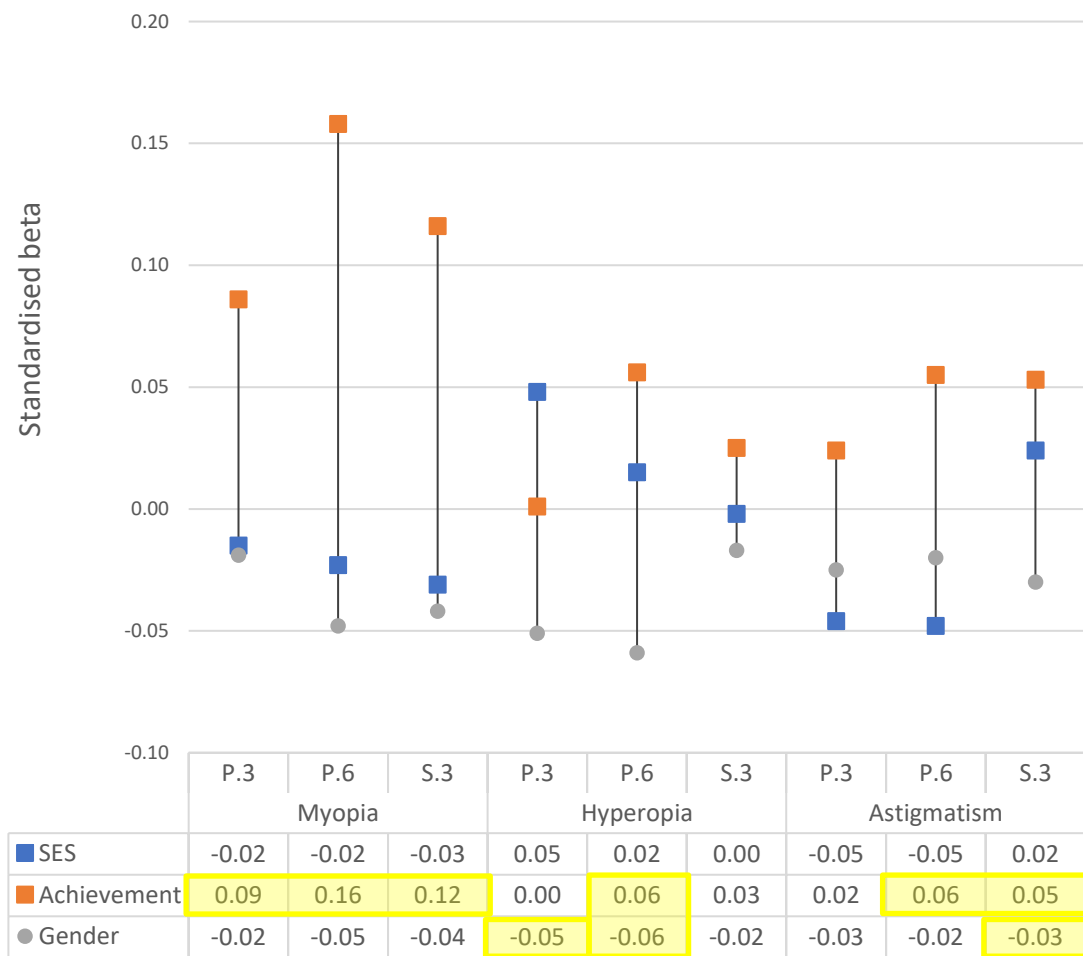
For Pupils Not Wearing Eyes



Note.

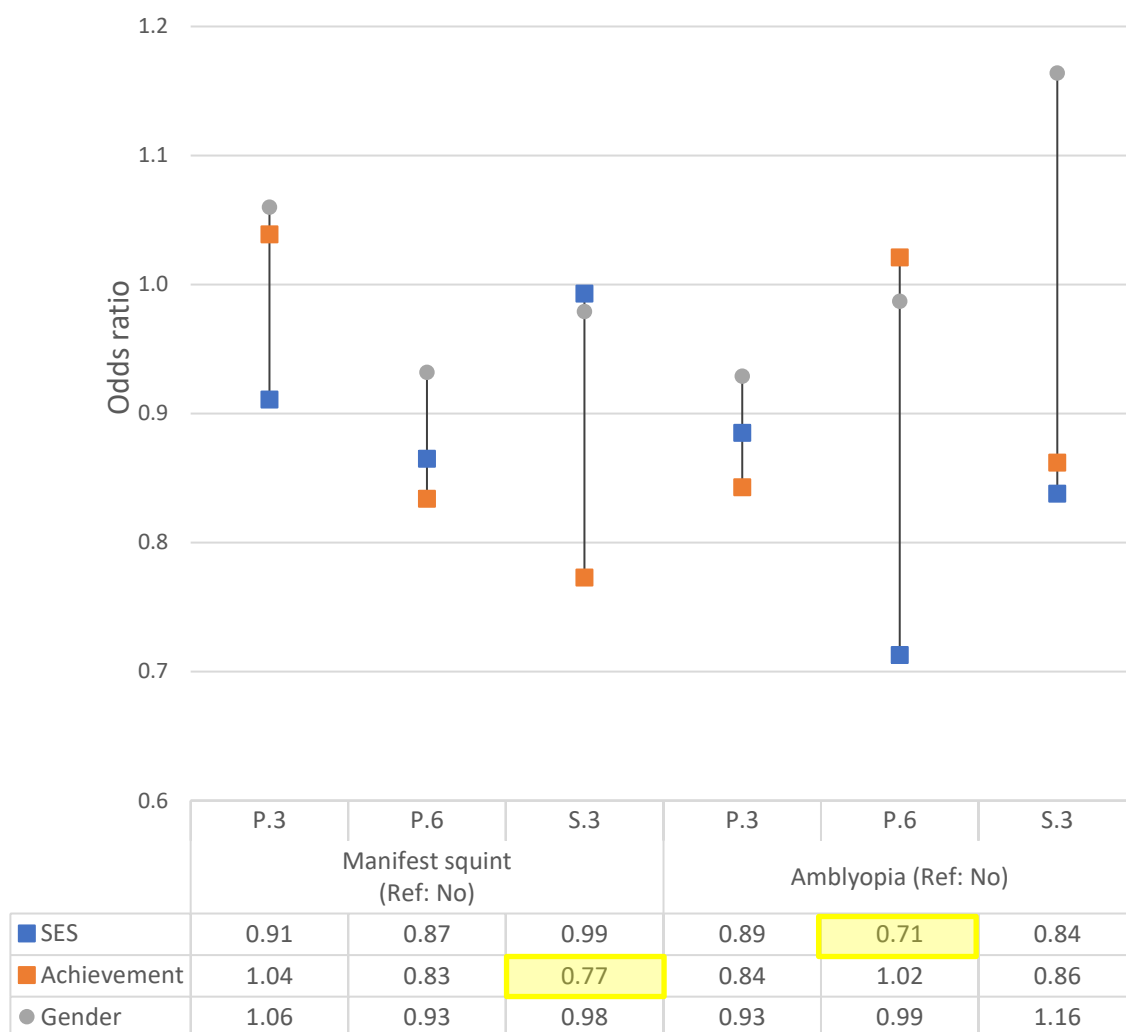
- Yellow = Healthy Eyes
- Pink = Myopia
- Blue = Hyperopia
- Slateblue = Astigmatism
- Tan = Manifest Squint
- Green = Amblyopia

Figure 10. Regression coefficient predicting the degree of pupils' vision conditions (1) with socioeconomic status, academic achievement, and gender (girl=1, boy=2).



Note. $p < .05$ highlighted in yellow.

Figure 11. Odd ratio predicting pupils' vision problems (2) with socioeconomic status, academic achievement, and gender (girl=1, boy=2).



Note. Odds ratios with $p < .05$ are highlighted in yellow.

Figure 12. Percentage of pupils wearing glasses by different vision problems (allowing comorbidity: pupils have multiple complications).

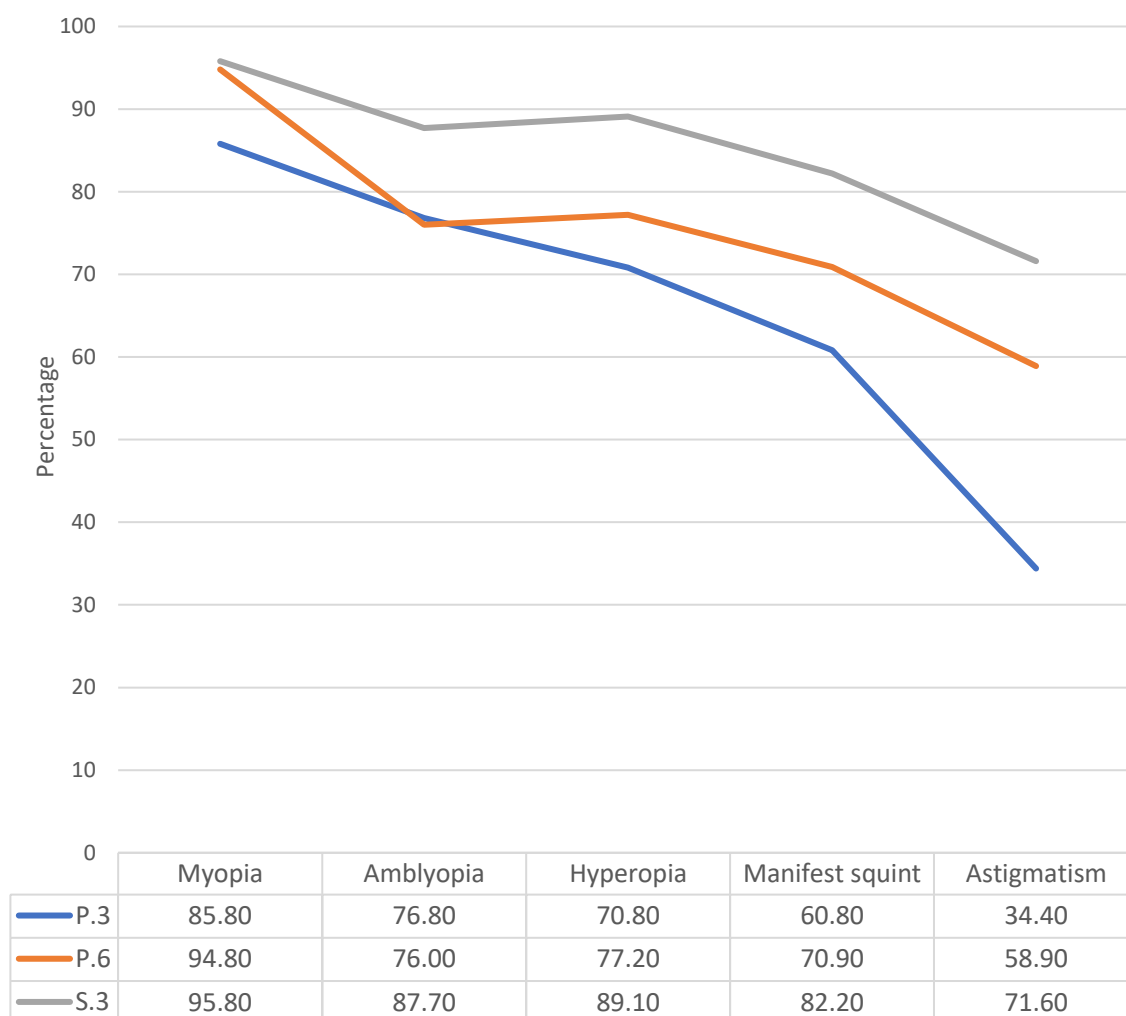
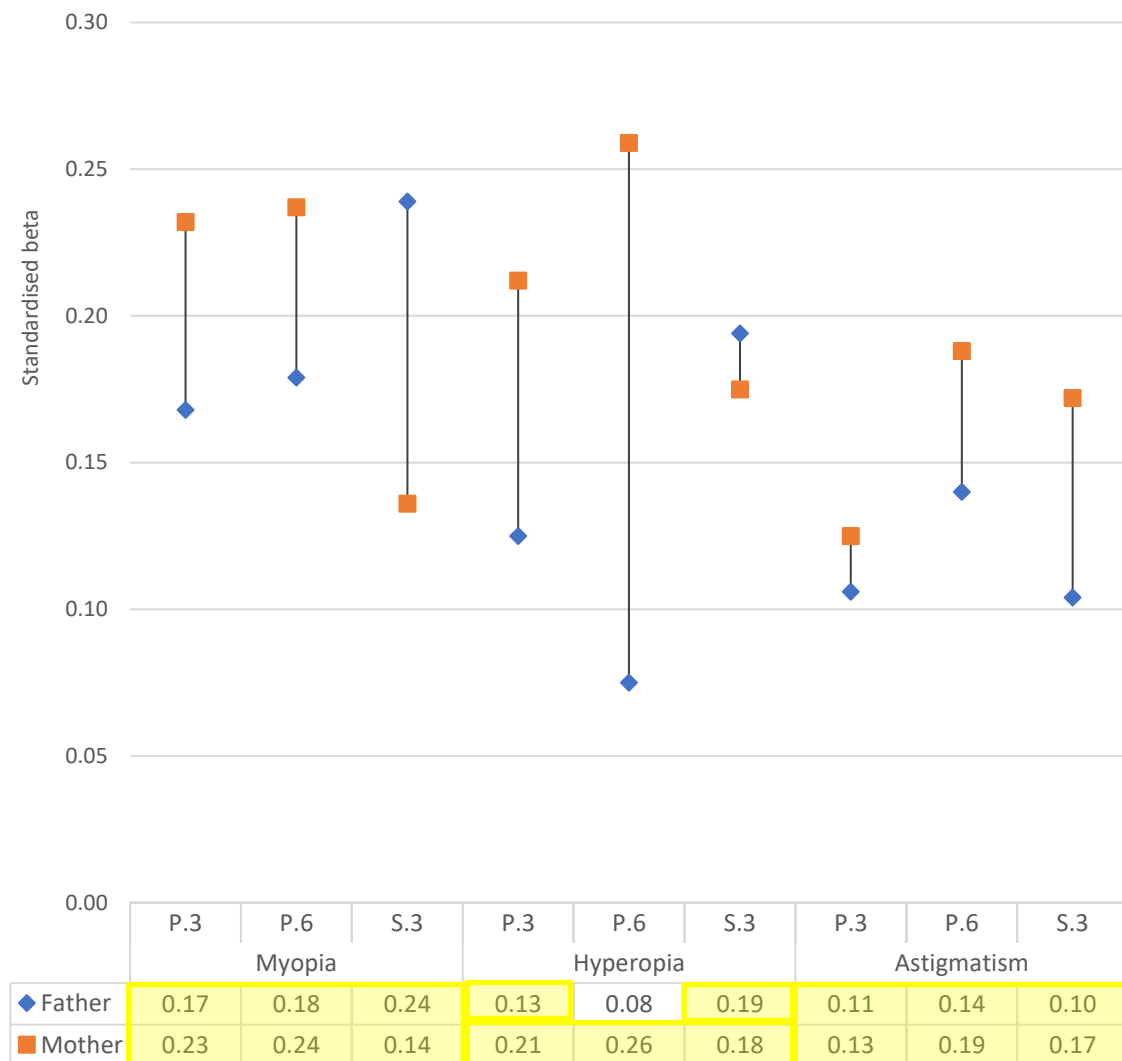
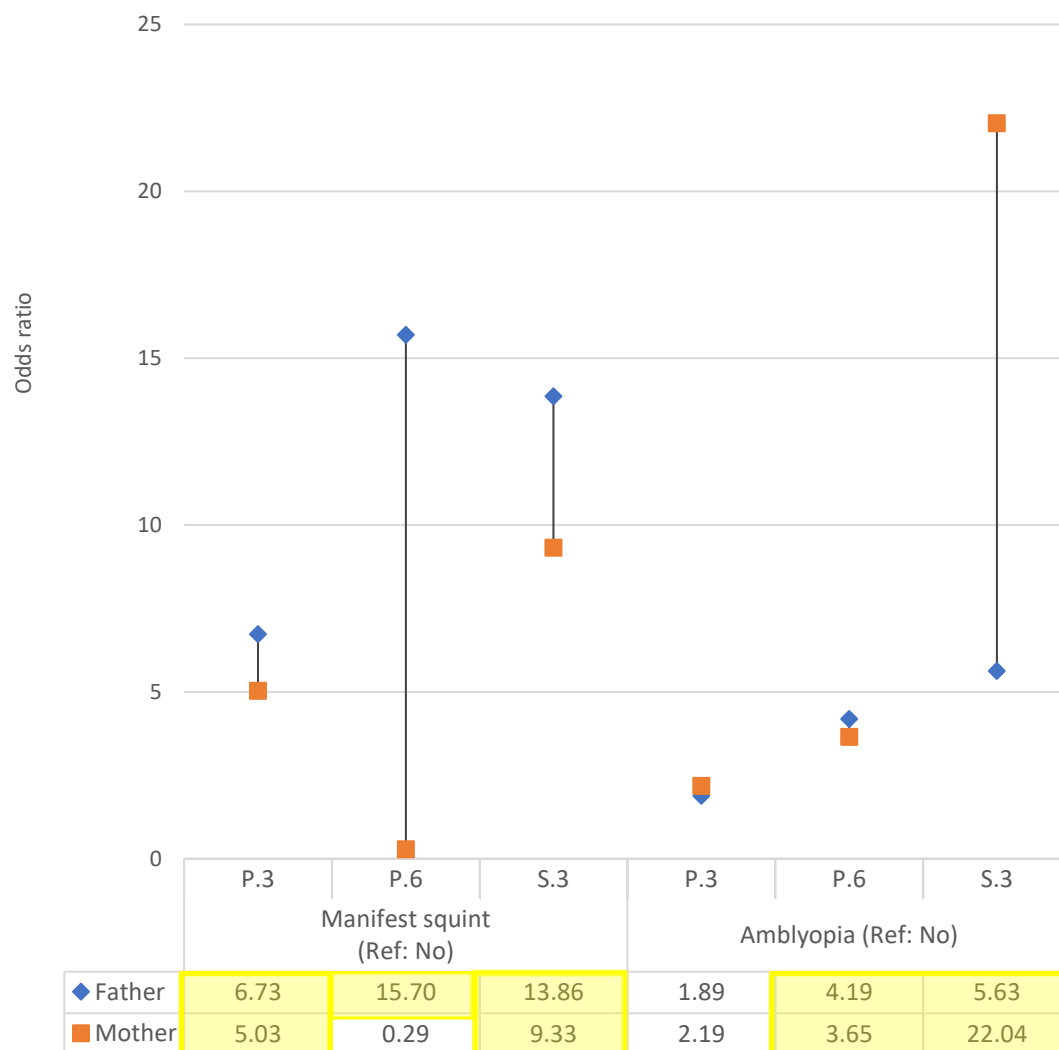


Figure 13. Predicting pupils' vision problems with fathers' and mothers' similar conditions.



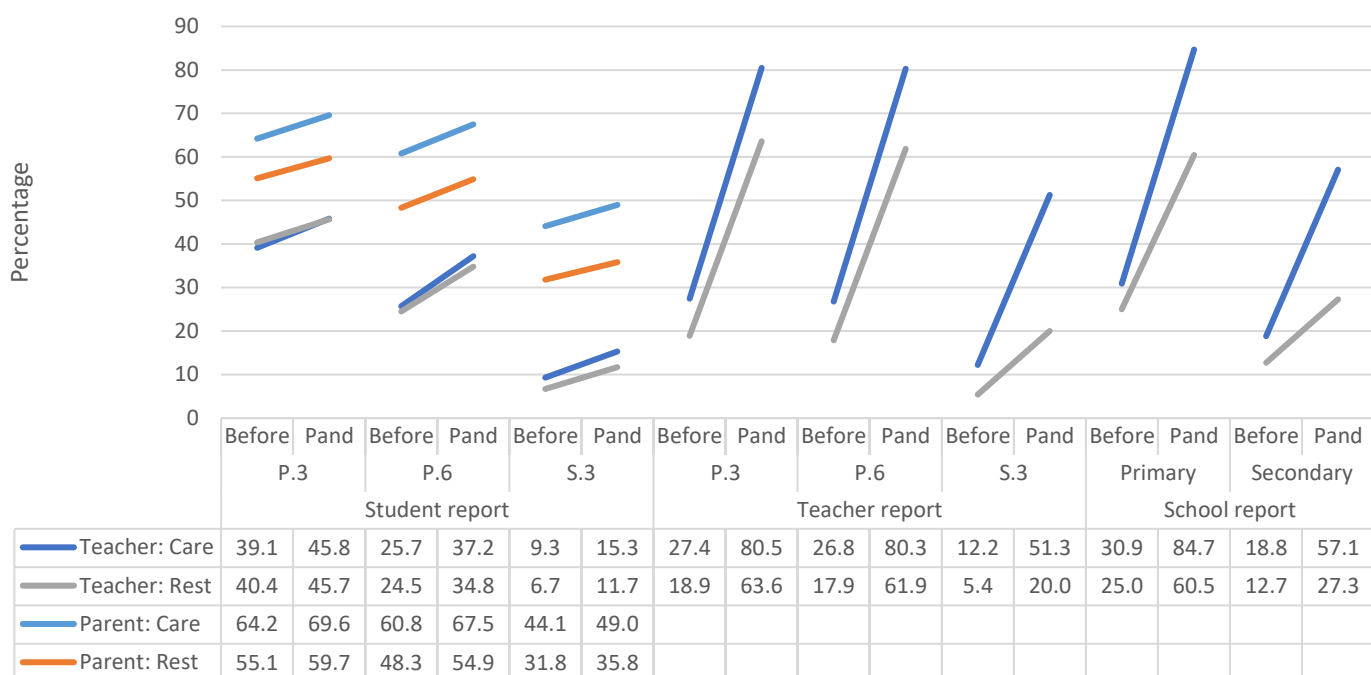
Note. Odd ratios with $p < .05$ are highlighted in yellow.

Figure 14. Predicting pupils' vision problems with fathers' and mothers' similar conditions.



Note. Odd ratios with $p < .05$ are highlighted in yellow.

Figure 15. Report of eye-care and eye-rest advice before and during the pandemic (June 2021) by pupils, parents, teachers, and schools.



Note.

The exact wordings of the questionnaire items of pupils, teachers, and schools were not identical, so the percentage cannot be strictly compared across the various stakeholders.

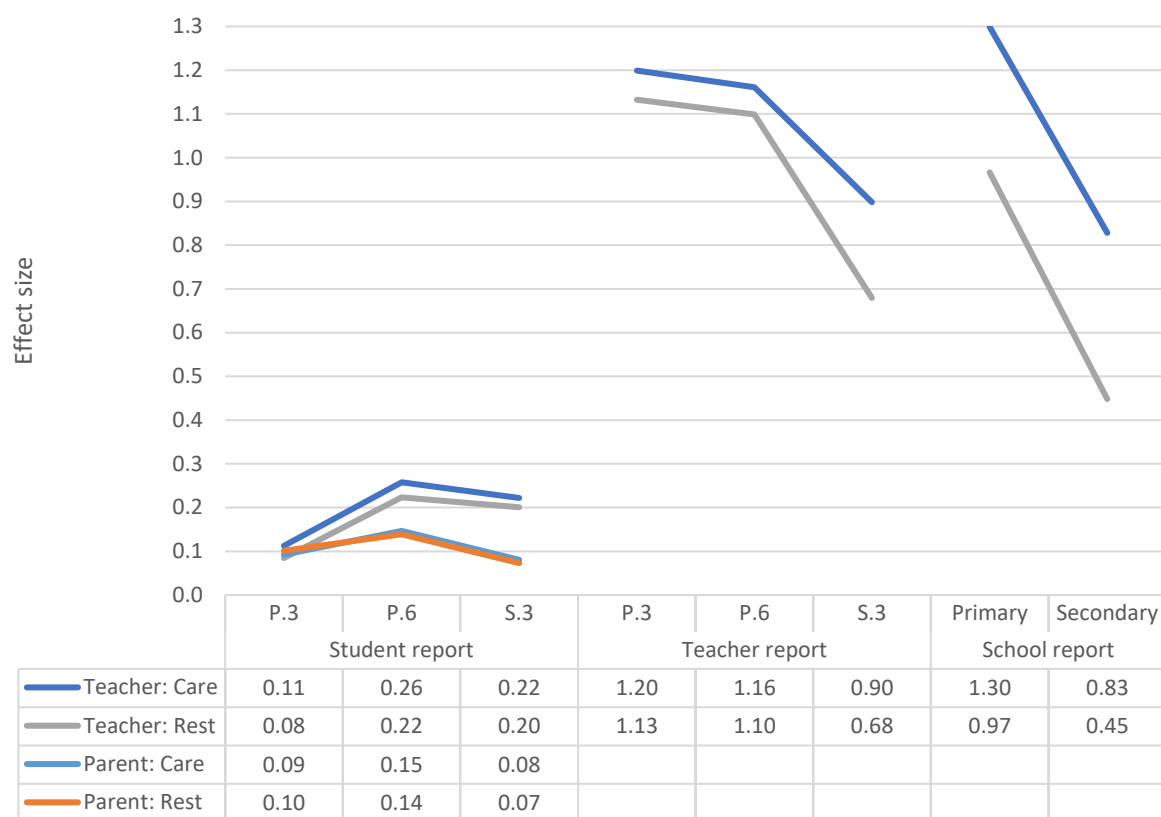
For pupils, % = once/twice a week + every day/almost every day

For teachers/school, % = frequently/in all or nearly all lessons

Before = Before the pandemic

Pandemic = During the pandemic (June 2021)

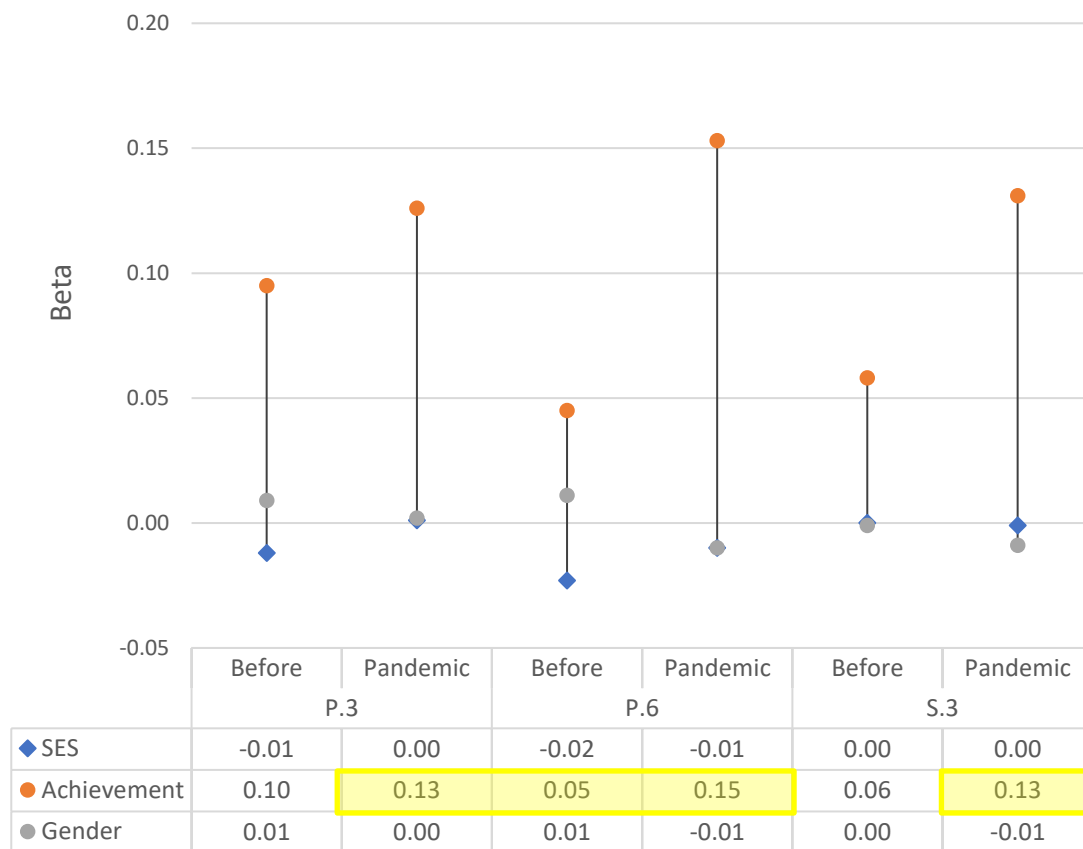
Figure 16. Report of change of eye-care and eye-rest advice before and during the pandemic (June 2021) as reported by pupils, parents, teachers, and schools.



Note.

The exact wordings of the questionnaire items of pupils, teachers, and schools were not identical, so the percentage cannot be strictly compared across the various stakeholders.

Figure 17. Predicting parental advice on eye care with pupils' socioeconomic status, achievement, and gender (1=girl, 2=boy).



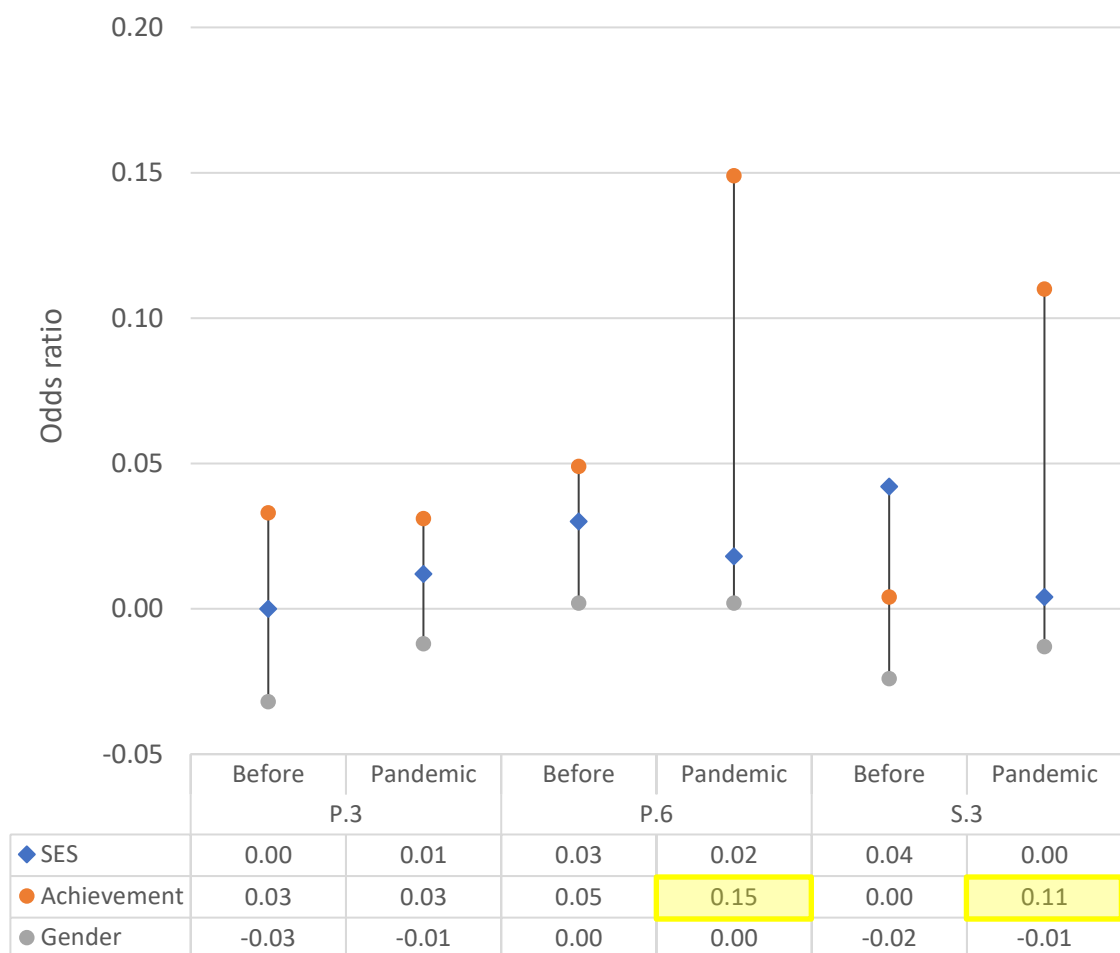
Note.

Before = Before the pandemic

Pandemic = During the pandemic (June 2021)

Note. $p < .05$ highlighted in yellow.

Figure 18. Predicting parental advice on “eye rest” with pupils’ socioeconomic status, achievement, and gender (1=girl, 2=boy).



Note.

Before = Before the pandemic

Pandemic = During the pandemic (June 2021)

Note. $p < .05$ highlighted in yellow.

Figure 19. Distribution of pupils with different changes in vision problems during the pandemic (June 2021), as perceived by parents.

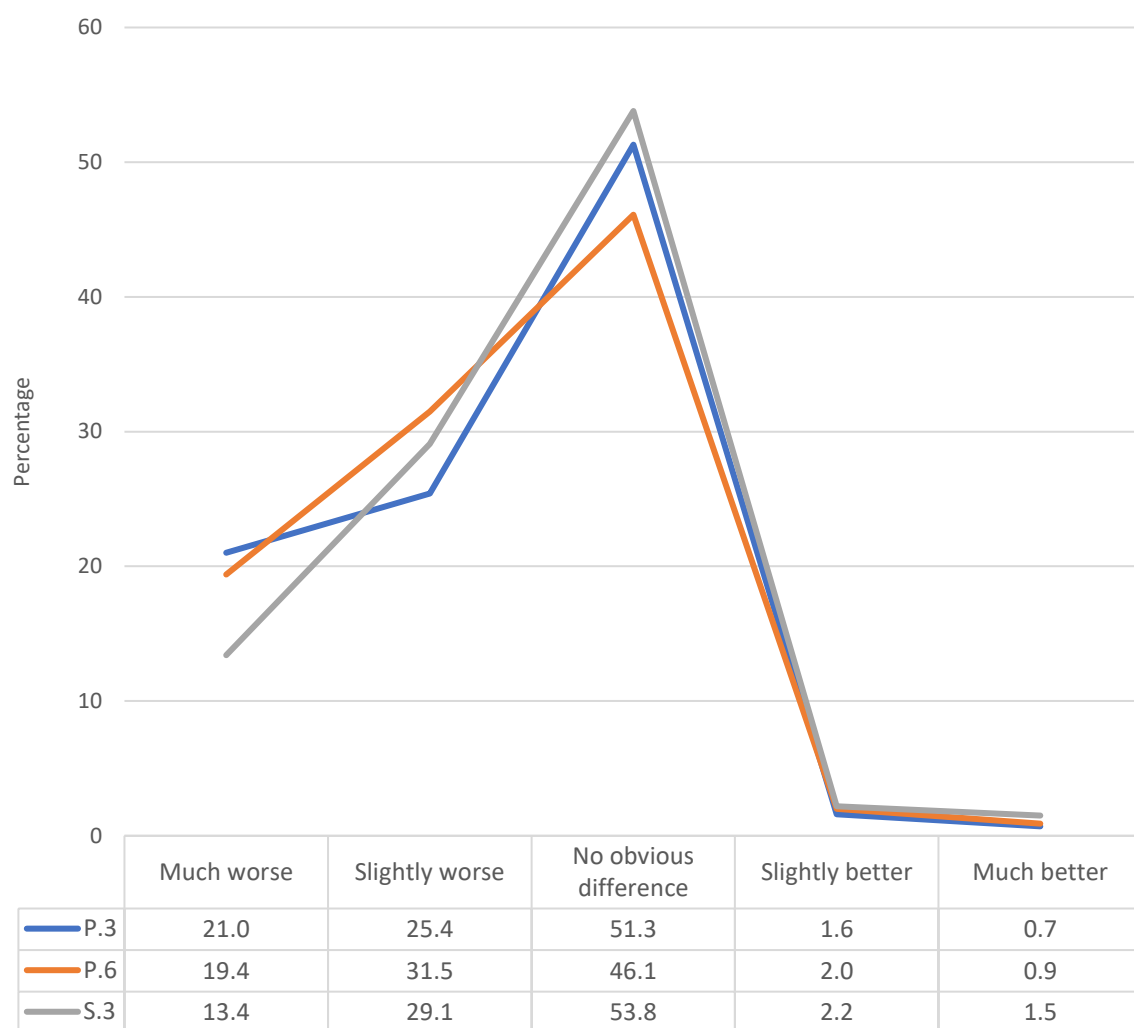


Figure 20. Predicting pupils' perceived change in vision problem and students' socioeconomic status, achievement and gender (1=girl, 2=boy).

