

Remote Video Testimony by Victims in Sexual Assault Cases Involving Minors

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Abstract: Crimes of sexual assault against minors are typically committed in concealed places by acquaintances, making the victim's statement the key evidence for conviction. When minor victims testify in court, they face the risk of secondary psychological trauma and privacy disclosure. Remote video testimony, which separates the victim from the courtroom through technical means, offers a viable way to balance procedural justice with the special protection of minor victims, yet it raises concerns over the principle of direct and oral trial, the right of confrontation, and technical security. This paper demonstrates the necessity and feasibility of remote video testimony, analyzes its practical difficulties, and proposes paths to improvement in terms of coordinating the principle of direct and oral trial, improving the mechanism of assistance and supervision, refining procedural rules, and strengthening technical safeguards, so as to protect the rights and interests of minor victims while upholding procedural justice.

1. Introduction

In recent years, crimes of sexual assault against minors have remained highly frequent and have become a prominent social problem infringing upon the rights and interests of minors. According to the White Paper on Procuratorial Work Concerning Minors (2024) issued by the Supreme People's Procuratorate, among the crimes against minors prosecuted nationwide in 2024, 25,558 persons were prosecuted for rape, accounting for 34.3%, and 11,650 for child molestation, accounting for 15.6%, the two categories together accounting for nearly half[1]. Such crimes are markedly distinctive. In terms of the crime scene, the acts mostly occur in relatively closed and concealed places such as homes and schools, and the perpetrators are mostly acquaintances of the victims, so that physical evidence and eyewitnesses are hard to leave behind; in terms of the victims themselves, they are generally of young age, with limited cognitive, expressive and self-protective abilities, and often find it difficult to state the facts clearly and completely after the offense; in terms of the capacity to testify, minor victims are not yet mentally mature and are prone to secondary harm when testifying in court, and thus need special protection. These features determine that evidence in such cases often takes a "one-to-one" form, the victim's statement becomes the key to ascertaining the facts of the case, and the quality of the victim's in-court statement directly affects fact-finding and conviction and sentencing. It is necessary to provide minor victims with a suitable environment for testifying, so as to ensure that they testify smoothly and completely while avoiding secondary

harm caused by testifying. Remote video testimony is precisely the technical solution responding to this need: it separates the victim from the courtroom scene through a screen-to-screen approach and constitutes an important exploration in resolving the above difficulties.

It should be noted that “remote video testimony” as used in this paper covers two situations: first, synchronous video examination, in which the minor victim, outside the courtroom, is examined in real time by the judge and both parties through a video link; second, the playing of pre-trial recorded statements, in which the full synchronous audio-video recording of the minor victim's pre-trial examination is played in court in place of in-court testimony. The former emphasizes “a change in the manner of testifying,” while the latter emphasizes “a substitution of the form of testimony,” and the two differ in procedural structure, the protection of the right of confrontation, and the review of evidence. The remote video testimony discussed in this paper refers primarily to the former, but the relevant procedural rules also have reference value for the latter.

Current norms have provided a preliminary institutional basis for this. Article 18 of the 2013 Opinions on Lawfully Punishing Crimes of Sexual Assault against Minors issued by the “Two Supremes and Two Ministries” provides that, in the trial of crimes of sexual assault against minors, minor victims and witnesses who are truly necessary to appear in court shall be subject to protective measures such as not revealing their appearance or real voices, and their statements and testimony may, where conditions permit, be played by video or other means[2]; Article 558 of the Interpretation of the Supreme People's Court on the Application of the Criminal Procedure Law of the People's Republic of China (hereinafter the “Interpretation of the Criminal Procedure Law”) provides that in criminal cases involving minors, minor victims and witnesses generally shall not testify in court, and those who must do so shall be subject to protective measures such as technical means and psychological intervention to protect their privacy[3]; the 2021 Rules on Online Litigation of People's Courts further require that online court sessions be conducted by video and provide for identity authentication, technical safeguards, and data security in online litigation[4]. These norms have laid an institutional foundation for the application of remote video testimony, but the relevant provisions remain rather general, and many problems still exist in both theory and practice regarding remote video testimony by victims in sexual assault cases involving minors. This paper first demonstrates its necessity and feasibility, then analyzes the practical difficulties, and finally proposes paths to improvement.

2. The necessity and feasibility of remote video testimony

2.1 The necessity of remote video testimony

First, it is conducive to protecting the psychological health of minor victims. Minor victims of sexual assault are mostly children or adolescents with fragile psychological endurance. Facing the solemn courtroom environment often makes them nervous and at a loss, and makes it difficult for them to organize their language and express themselves normally; in an environment facing the defendant who committed the crime, they are more likely to feel great fear, which may trigger post-traumatic stress reactions, cause secondary harm, and even lead to their reluctance or fear to testify. Remote video testimony creates an environment physically isolated from the courtroom scene for minor victims, placing them in a relatively comfortable and relaxed state, and reduces their psychological pressure and traumatic stimulation through a screen-to-screen dialogue; when necessary, their trusted guardians or psychological counselors may accompany them to further relieve their tension and ensure that they testify smoothly.

Second, it is conducive to improving the reliability of testimony. The testimony of minor victims is fallible. Compared with adults, minors differ significantly in event perception, reaction, and memory: their logical thinking is not yet mature, their ability to construct remembered events is

insufficient, and in the tense courtroom environment their language expression may become disconnected from their inner thoughts. Remote video testimony allows their identity to be concealed through technical means (such as real-time voice alteration and image blurring), enabling them to focus more on stating the facts and reducing external interference. The testimony of minor victims is susceptible to suggestive questioning; that is, they find it hard to resist the interference of external information or pressure in the cognitive process. High-level pressure not only impairs their memory but also enhances their suggestibility, and repeated, confrontational questioning is especially likely to induce false memories[5]. Remote video testimony may draw on the intervention of professional support such as child psychology experts and social workers to guide minor victims to recall events through gentle questioning, avoiding the confrontational questioning of traditional cross-examination, and thereby ensure the completeness and authenticity of the testimony. The above research on children's testimony also shows that the accuracy of minors' statements is closely related to the manner of questioning and environmental pressure, and that a suitable testifying environment helps improve the quality of their statements, which provides empirical support for remote testimony in reducing pressure and ensuring the reliability of testimony.

Third, it is conducive to implementing the principle of “the best interests of minors.” The 2017 Guidelines for Procuratorial Work Concerning Minors (for Trial Implementation) issued by the Supreme People's Procuratorate first clarified the requirement of “one-stop” evidence collection[6], aiming to avoid the secondary harm caused to minor victims by repeated examination and repeated recall of traumatic experiences under the traditional case-handling model. The Law of the People's Republic of China on the Protection of Minors (revised in 2020) established the principle of “the best interests of minors” in Article 4[7], emphasizing special and prioritized protection of minors; Article 112 of the Law requires that, when handling sexual assault cases involving minors, measures such as synchronous audio-video recording be adopted and examination be completed as far as possible in one session when examining minor victims and witnesses[7]. Remote video testimony is a concrete manifestation of implementing the above requirements and reducing the secondary harm to minor victims: it extends the requirements of “completing in one session” and “synchronous audio-video recording” to the trial stage through technical means, allowing the statements formed through pre-trial “one-stop” evidence collection to be used directly at the trial stage and avoiding repeated examination.

Fourth, remote video testimony conforms to the requirements of “the best interests of minors” and the protection of witness rights. Minor victims are prone to secondary harm due to their psychological vulnerability, and remote video testimony reduces their pressure through spatial isolation, satisfying the special protection requirement of Article 110 of the Law on the Protection of Minors that minor victims and witnesses generally shall not testify in court and, where they must do so, protective measures shall be adopted[7]. This model does not deprive the defendant of the right of confrontation: minor victims still need to be examined by both the prosecution and the defense, with only the spatial form changed, and the basic pattern of confrontation between the prosecution and the defense is not thereby unbalanced. When the more important public interest of protecting minor victims from trauma conflicts with the defendant's right to be present, the latter may properly yield, resulting in a defective right to be present, and this defect can be remedied through technical assistance. It is legitimate to include sexual assault cases involving minors within the scope of application of remote video testimony.

Fifth, it is conducive to saving judicial resources and improving trial efficiency. Testifying in court by minor victims usually requires dedicated escort and waiting arrangements, and trials may be postponed multiple times due to their unstable emotional state; in the case of remote or cross-region testimony, the round-trip and placement costs are even higher. Remote video testimony

completes testimony through an online connection, sparing the victim and their guardian the travel and waiting time, reducing the court's supporting expenditures on escort, security, and venue arrangements, and also contributing to the concentrated and efficient conduct of the trial. Saving judicial resources is not the direct purpose of remote testimony but merely a positive effect incidentally produced in the process of implementing the special protection of minor victims, which should not weaken the adherence to procedural justice and the protection of the right of confrontation.

It should also be noted that remote video testimony is not applied in isolation but should be linked and combined with other special protection systems for minors, such as closed hearings, synchronous audio-video recording, “one-stop” evidence collection, the presence of appropriate adults, and the sealing of criminal records. For example, remote testimony should in principle be combined with closed hearings to further reduce the exposure of minors' personal information; the synchronous audio-video recordings produced by remote testimony should be managed together with the recordings produced by pre-trial “one-stop” examination to prevent repeated examination. Clarifying the above linkage helps remote testimony operate in an orderly manner within the existing protection system.

2.2 The conditions for realizing remote video testimony

The feasibility of remote video testimony is mainly reflected in three dimensions: technical realizability, legal compatibility, and practical foundation.

From the perspective of technical realizability, China's judicial system already has the technical basis to support remote testimony, the core of which lies in three functions: identity authentication, real-time interaction, and privacy protection. In terms of identity authentication, the Yuexiu District Court of Guangzhou first created “face-scan testimony” in 2017, under which a witness joins the trial after facial recognition and comparison with public security databases, verifying the feasibility of identity authentication technology[8]; the Rules on Online Litigation of People's Courts also provide that participants in online litigation shall first register their real names on the litigation platform, that courts shall verify identities through such means as online comparison of certificates and identification platform authentication, and that identity shall be verified again when conducting online court sessions and other activities[4]. In terms of real-time interaction, the large bandwidth and low latency of 5G technology have supported multi-party court sessions and synchronous confrontation, and the clarity and stability of audio-video transmission continue to improve. In terms of privacy protection, physical isolation of witness rooms and real-time facial blurring and voice alteration have been applied to sensitive cases; the Rules on Online Litigation of People's Courts also require that, when witnesses appear online, courts shall ensure that they do not attend the trial or are not disturbed by others through designating online testifying venues and setting up online witness rooms[4]. At present, courts at all levels nationwide have generally carried out online trials and remote testimony on the basis of various online litigation platforms; with the increasing maturity of technologies such as blockchain evidence storage, intelligent speech recognition, and remote signatures, the synchronous recording, trusted evidence storage, and transcript confirmation of the testifying process are gradually being made electronic and traceable. The above practice and rules show that remote testimony is already technically operable.

From the perspective of legal compatibility, current norms provide the basis for remote video testimony by victims in sexual assault cases involving minors. Article 18 of the Opinions on Lawfully Punishing Crimes of Sexual Assault against Minors and Article 558 of the Interpretation of the Criminal Procedure Law both recognize the use of video or other means or “technical means to protect privacy” to protect minor victims, providing a direct basis for remote testimony; Article

281 of the Criminal Procedure Law requires that, when examining minor victims, their legal representatives or appropriate adults be present[9], and the remote model can realize their “presence” through technical assistance so as to protect the procedural rights of minor victims. Remote video testimony thus conforms to the general requirements of the rules of evidence and procedural justice and also satisfies the special protection of minor victims, and is legally feasible. The current norms still suffer from scattered provisions and insufficient specificity and need further integration and refinement.

From the perspective of practical foundation, remote video testimony has accumulated some exploration. The Supreme People's Procuratorate has promoted the “one-stop” case-handling mechanism, requiring that examination, evidence collection, and psychological counseling for minor victims be completed in principle in one session, on the basis of which various localities have built a number of “one-stop” case-handling venues integrating examination, inspection, and protection, and have gradually equipped them with devices for synchronous audio-video recording and remote video; procuratorial organs in some regions have also joined with public security organs and courts to establish cooperation mechanisms for the protection of minor victims and remote testimony. These practices have both verified the technical feasibility of remote examination and exposed problems such as inconsistent venue standards and varied operating procedures, accumulating experience for the standardized operation of remote video testimony and providing a realistic foundation for its transformation from case-by-case exploration to institutional normality. The existing exploration is mostly local and scattered practice, still lacking a nationally unified special norm, and its scope of application, operating procedures, and evidentiary effect need to be further clarified, which also highlights the urgency of institutional supply.

3. Practical difficulties of remote video testimony

3.1 The impact on the principle of direct and oral trial

The principle of direct and oral trial is a basic principle of criminal trials, including two levels: the principle of direct trial and the principle of oral trial. The former requires judges to have direct contact with evidence and personally hear statements, while the latter requires participants in the proceedings to make statements in court orally. The common core of the two lies in “immediacy”: judges form their conviction and examine the authenticity of evidence by personally and directly hearing the statements of the parties and other participants and by observing their words and expressions[10]. When victims in sexual assault cases involving minors testify by remote video, they achieve “audio and video presence in court” but “physically stay elsewhere,” which impacts the principle of direct and oral trial: for judges, being separated from minor victims by a screen makes it difficult to fully capture details such as their expressions, tone, and body language, reducing the ability to perceive the authenticity of statements and affecting the accuracy of forming conviction; for defendants, being physically isolated from the victims deprives them of the conditions for face-to-face confrontation, the environment for observing words and expressions no longer exists, and the effect of confrontation is weakened; for the trial itself, its immediacy and ritual are diluted, and the restraining function of the court's solemn atmosphere against false statements is diminished. In judicial practice, remote testimony often aggravates the above problems due to technical obstacles such as audio-video delay and blurred images, and raises doubts as to whether remote testimony hollows out the principle of direct and oral trial.

3.2 Potential interference by the appropriate adult system

The appropriate adult system requires that, when judicial organs examine minor victims, their

legal representatives or other appropriate adults be present to supervise the examination and protect their lawful rights and interests. The original purpose of the system is to provide minors with emotional support and procedural safeguards through the presence of adults, and its functional orientation combines the dual dimensions of “protection” and “supervision.” In the remote testimony scenario, however, the presence of appropriate adults may improperly interfere with the testimony of minor victims. On the one hand, if the appropriate adult has a strained relationship with the victim or behaves improperly, they may exert suggestion on the victim through expressions, actions, or language, causing the victim to deviate from a truthful statement; some guardians without professional training may unconsciously guide the victim to echo specific answers by nodding or shaking their heads while observing. On the other hand, in sensitive cases involving sexual assault, minor victims may find it difficult to testify frankly due to factors such as the gender and identity of the appropriate adult; especially when the perpetrator is a family member or close relative, the attending guardian may have an interest relationship with the defendant, and the pressure of social norms and family ethics may be transmitted through video, affecting the authenticity of the testimony. In practice, there is also the problem of “formalized presence” of appropriate adults: some attending persons do not have a clear understanding of their duties, or are merely satisfied with being “physically present” without actually performing the duties of supervision and communication, reducing the supervision function of the system to a mere formality. Although remote testimony spares minor victims from facing the defendant, the presence of appropriate adults may itself constitute a new source of interference, and how to clarify the relationship between their supervisory function and the independence of testimony is a problem urgently in need of solution.

3.3 Restrictions on the defendant's right of confrontation

The right of confrontation is the core content of the defendant's right of defense, referring to the defendant's right to cross-examine and question testimony unfavorable to them. China's Criminal Procedure Law requires that evidence be examined and verified through confrontation in court and that witness testimony be the basis for deciding the case only after being examined by both the prosecution and the defense. The right of confrontation has the dual function of discovering truth and ensuring procedural justice: on the one hand, examining the authenticity and reliability of testimony through cross-examination by both parties; on the other hand, ensuring the legitimacy of the defendant's equal confrontation and substantive participation in the proceedings. In offline trials, both parties may observe the witness's body language and eye contact at close range and use the solemn atmosphere of the court to suppress the witness's motivation to give false testimony. In remote testimony, however, the defendant and the victim are on the “same screen” but not in the same physical space; technical obstacles such as audio-video delay and blurring make it difficult for both parties to capture the victim's micro-expressions and tone changes; indirect communication reduces the oppressive force and immediacy of questioning, confrontation tends to become formalistic, and the defendant finds it difficult to reveal contradictions through immediate follow-up and continuous questioning. Faced with the above restrictions, some defense lawyers turn to applying for the victim to testify offline or for the exclusion of such testimony, intensifying the dispute between the prosecution and the defense over the legitimacy and propriety of remote testimony. In practice, defense lawyers often oppose remote testimony because of insufficient confrontation and question its applicability in adversarial trials. This reveals the technical limitations faced by the defendant's right of confrontation under the remote testimony model. The protection of the right of confrontation can neither be entirely sacrificed for the sake of protecting the victim nor allow secondary harm for the sake of adhering to formal confrontation; a dynamic

balance must be sought between protection and confrontation, and the substantive exercise of the right of confrontation must be ensured through procedural reinforcement[11].

3.4 Risks of technical security and the determination of probative value

The application of remote video testimony also faces practical difficulties at the level of technical security and the determination of probative value. First, identity authentication and the authenticity of audio and video are difficult to guarantee absolutely. Remote testimony relies on Internet transmission; although the Rules on Online Litigation of People's Courts have established identity verification mechanisms such as real-name authentication, the “identity of the person” in the network environment still faces the risks of impersonation and account theft; audio and video signals may also be distorted, delayed, or interrupted during transmission due to network attacks or equipment failures, directly affecting the authenticity of the statement. Second, the integrity and tamper-proofing of the data of the testifying process face challenges. The synchronous audio-video recordings and electronic transcripts produced by remote testimony are electronic data, which face the risk of being tampered with or forged during storage, transmission, and reproduction; without complete technical safeguards and standardized operating procedures, their probative value will be seriously weakened. Third, the supply of rules for determining probative value is insufficient. Although the Interpretation of the Criminal Procedure Law provides general rules for the review of the authenticity, integrity, and legality of electronic data[3], there is still a lack of detailed review standards for the specific scenario of remote video testimony, such as how to review whether the audio and video are synchronous, whether the statement is subject to off-screen suggestion, and whether the audio-video recording is complete and continuous; in practice, judges may both be reluctant to admit remote statements out of concern for technical reliability and find it difficult to substantively determine their probative value due to the absence of review rules. Fourth, there are risks in data security and privacy protection. Remote testimony involves sensitive data such as the identity information and statement content of minor victims, which are transmitted and stored in the Internet environment and face the risk of leakage and abuse; although the Rules on Online Litigation of People's Courts establish the principle of security and reliability and require relevant entities to perform data security obligations[4], the data security protection capabilities of various parties in practice are uneven, and any leakage will cause irreparable secondary harm to minor victims. The technical standards of online litigation platforms in various localities are not unified and the levels of data security protection are uneven, which amplifies the above risks and may expose cases of the same kind to different levels of technical protection in different regions. The superimposition of technical risks and the absence of rules is the main obstacle facing remote video testimony at the evidentiary level.

4. Paths to improve remote video testimony

4.1 Coordinating remote testimony with the principle of direct and oral trial

In response to the impact of remote testimony on the principle of direct and oral trial, the two should be coordinated through technical improvement and rule refinement on the premise of adhering to the substantive requirements of the principle of direct and oral trial. In the digital context, the principle of direct and oral trial takes on a new connotation. The focus of “immediacy” shifts from physical presence to substantive participation: as long as the judge can hear and fully examine the statements of minor victims in real time, the substantive requirements of the principle are not violated. Remote testimony is therefore not a departure from the principle of direct and oral trial but a form of its realization under technical conditions. To compensate for the limitations of

remote testimony in observing facial expressions and demeanor, technical measures, such as improving video clarity, reducing delay, and ensuring audio-visual synchronization, should be adopted so that judges can fully capture the speaker's expressions and tone. Where necessary, close-up shots and multi-camera transmission may be arranged for minor victims to enhance the completeness of visual information. For cases in which confrontation is inadequate due to technical failure, a remediation mechanism should be established, allowing re-testimony or a switch to offline supplementary examination when necessary, so as to ensure the completeness and fairness of the proceedings. Finally, the admissibility of procedurally lawful remote statements should be affirmed. Remote testimony is not an exception to the principle of direct and oral trial but a way of realizing it in the digital age; this recognition can eliminate concerns in judicial practice over the legality of remote testimony.

4.2 Improving the mechanism of third-party assistance and supervision

To prevent minor victims from being improperly interfered with during remote testimony, the mechanism of third-party assistance and supervision should be improved. When a judge considers that a minor victim may be interfered with, they may designate a place with public service functions and the necessary technical equipment, such as a court trial chamber, a judicial office, a township (subdistrict) mediation center, or a villagers' (residents') committee, as the venue for online testimony, with the staff of that place assisting in verifying identity, supervising the testifying environment, and ensuring the signing of transcripts. The significance of this mechanism lies in: reducing the risk of the testifying environment being manipulated through the authority of public places; completing key steps such as identity verification and transcript confirmation with the assistance of professional institutions; and making up for the deficiency of minor victims' personal equipment or technical capacity with the hardware facilities of grassroots organizations. To this end, a unified directory of designated venues should be established, clarifying qualification standards and equipment requirements; a coordination platform among courts, assisting institutions, and testifying venues should be developed; standardized supervision procedures (such as full audio-video recording and two-person witnessing) should be formulated; and the supervision should be recorded in the trial record. At the operational level, the boundary of the assisting personnel's duties should be refined, clarifying that they are only responsible for technical matters such as identity verification, environmental supervision, and transcript confirmation, and shall not intervene in or guide the content of the victim's statement; the entire testifying process shall be synchronously recorded and signed by the assisting personnel, and when necessary the judge shall review the recording after the trial so as to promptly discover and correct interference; as for the presence of appropriate adults, whether they have an interest relationship with the victim or the defendant should be reviewed before trial, and they should be replaced or newly designated when necessary, so as to maintain the independence of testimony while ensuring the safety of the testifying environment.

4.3 Improving the procedural rules of remote video testimony

The application of remote video testimony requires more refined procedural rules, which must in particular fit the particularity of minor victims. The subjects and questions of confrontation should be strictly restricted. The defendant should be prohibited from directly examining minor victims, and priority should be given to examination by defense counsel through remote video. Where the victim has no defense counsel, the court may appoint a lawyer or adopt written confrontation, with the judge examining on the victim's behalf based on questions reviewed and approved in advance. A system of prior review of questions should also be established. At the pre-trial conference, guided

by the principle of protecting minor victims, questions that intrude upon their privacy but are unrelated to the case, such as those concerning sexual experience and sexual orientation, should be clearly prohibited. Such questions may be raised only when the information is necessary for the determination of criminal facts and is permitted by the presiding judge. During the trial, the presiding judge should exercise full control and promptly stop improper confrontation. In the manner of questioning, a gentle, non-confrontational manner should be advocated, minor victims should be allowed to rest or answer with the assistance of professionals when necessary, and pressure by repeated, suggestive, or intimidating questioning should be avoided.

Expand the rules of notification. Before online testimony, minor victims and their legal representatives should be fully notified of procedural requirements such as the testifying environment, order, and discipline, specifying the selection of a testifying environment with stable network, adequate lighting, and quiet and enclosed conditions, and disciplinary requirements such as not leaving midway or answering phone calls during testimony, so as to ensure the standardization and solemnity of online trials. They should also be notified of the rights they enjoy, including the right to apply for a closed hearing, to apply for technical protective measures, and to obtain professional assistance, so as to ensure that minor victims testify voluntarily and autonomously on the basis of full knowledge. Notification should be made in language and manner understandable to minors, and a notification transcript should be made and kept for later verification.

Improve the rules for handling technical obstacles. Rules should be established to clarify how interrupted testimony is handled and how its effect is determined in cases involving network interruption, video stuttering, and audio-visual delay. Where a technical failure makes it impossible to complete a statement, the testimony should be suspended and resumed on another date; statements already completed may be admitted if verified to be unaffected. Where key parts of a statement are missing or unidentifiable because of technical failure, they shall not be used alone as the basis for deciding the case. The integrity guarantee and tamper-proofing mechanism for full audio-video recording should also be improved, and the testifying process should be fixed through technical means such as integrity check values and blockchain evidence storage, so as to prevent technical failure from affecting the probative value of minor victims' statements.

Unify the technical standards of remote testimony. In view of the current situation of inconsistent standards and duplicated construction of online litigation platforms in various localities, technical standards should be unified in stages along the path of “locality–region–nation,” giving priority to the standardization of systems within a province, clarifying unified technical requirements for core steps such as identity authentication, audio-video transmission, audio-video recording, and data encryption, narrowing the judicial injustice caused by the “digital divide,” and avoiding the imbalance in the level of victim protection caused by differences in technical conditions between regions.

Clarify the conditions for applying and the circumstances excluding remote testimony. Remote testimony is not automatically applicable, and a necessity review should be conducted before its initiation: it may be applied only when it is truly necessary for minor victims to testify and in-court testimony would bring an obvious risk of secondary harm; for minors who can fully express their will, the opinions of themselves and their legal representatives should be heard. Where technical conditions are unavailable and the quality of audio and video and the security of data transmission cannot be guaranteed, or where the application of remote testimony would seriously affect the defendant's right of confrontation and make it difficult to ensure procedural justice, remote testimony should not be adopted, and a switch should be made to offline testimony or other protective measures such as closed hearings and technical isolation. By clarifying the conditions of application and the circumstances of exclusion, the improper expansion or evasive application of remote testimony should be prevented.

4.4 Strengthening technical security and evidence review

In response to the risks in technical security and the determination of probative value, improvements should be made at two levels: technical safeguards and evidence review. At the level of technical safeguards, first, unify identity authentication standards by adopting multiple authentication methods combining real-name registration, facial recognition, and certificate information comparison, and leave traces of the entire login and use of testifying accounts so as to reduce the risk of impersonation; second, clarify the requirements for testifying venues and technical conditions, stipulate basic standards such as network bandwidth, audio-video clarity, and encrypted data transmission, realize synchronous audio-video recording and trusted evidence storage of the testifying process, and promote blockchain and other tamper-proofing technologies to fix the testifying process; third, consolidate data security responsibilities, clarify the data security protection obligations of online litigation platforms and relevant entities, and apply graded protection and strict access control to sensitive data such as the identity information and statement content of minor victims so as to prevent leakage and abuse. At the level of evidence review, reference should be made to the review rules in the Interpretation of the Criminal Procedure Law on the authenticity, integrity, and legality of electronic data to clarify the focus of reviewing the audio-video recordings of remote testimony: review whether the audio and video are synchronous and whether there is interruption or splicing, whether the integrity check values are consistent and whether there are traces of tampering, and whether the collecting entity and procedure conform to technical standards; audio-video recordings whose authenticity cannot be guaranteed due to technical failure or missing data shall not be used as the basis for deciding the case. A mechanism for auxiliary review by professional technical personnel should be established, under which persons with specialized knowledge may, when necessary, give opinions on technical issues so as to help judges accurately determine the probative value of remote testimony. Technical parameters such as integrity check values and evidence-storage timestamps of audio-video recordings should be transferred with the case and displayed in court, thereby facilitating confrontation by both parties. Through the synergy of technical safeguards and evidence rules, the impact of technical uncertainty on fact-finding should be minimized. Technical standards, evidence rules, and procedural rules should also be improved in a synchronized manner so as to avoid the improper application caused by “technology running ahead while rules lag behind.”

5. Conclusion

Remote video testimony is a product of the digital transformation of the judiciary. Against the background of the high incidence of sexual assault crimes against minors and the urgent need to protect the rights and interests of minor victims, its value lies not only in providing technical tools for case adjudication but also in promoting the coordinated unification of the special protection of minor victims and procedural justice. Although the impact of this model on the principle of direct and oral trial, the appropriate adult system, the defendant's right of confrontation, and technical security and the determination of probative value objectively exists, a dynamic balance between the special protection of minor victims and judicial fairness can still be achieved through the coordinated advancement of technical empowerment and institutional innovation. In the future, on the basis of summarizing practical experience, technical standards for remote testimony should be unified, special rules for remote testimony by minor victims should be refined, and the mechanism for technical security and evidence review should be improved; a special provision on remote testimony should be added in the revision of the Criminal Procedure Law, clarifying its conditions of application, procedural requirements, and evidentiary effect, so as to transform this model from practical innovation to institutional normality and achieve a dynamic balance between protecting

the rights and interests of minor victims and upholding the bottom line of procedural justice.

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